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ORIGINAL ARTICLES

PREVENTION OF ACCIDENTS IN BLOOD TRANSFUSIONS 1301
A. S. Wiener, M.D., Brooklyn, N. Y.

TRAUMA, STRESS, AND CORONARY THROMBOSIS 1306
A. R. Moritz, M.D., Cleveland

MEDICOLEGAL ASPECTS OF STERILIZATION, ARTIFICIAL INSEMINATION, AND ABORTION 1309
E. J. Holman, LL.B., Chicago

ADVICE TO THE MEDICAL WITNESS 1311
W. I. Gilbert Jr., LL.B., Los Angeles

LEGAL ASPECTS OF A MEDICAL PARTNERSHIP 1314
G. E. Hall, J.D., Chicago

MALPRACTICE, AN OCCUPATIONAL HAZARD 1317
L. J. Regan, LL.B., M.D., Los Angeles

NEWER CONCEPTS IN THE DIAGNOSIS AND TREATMENT OF RHEUMATIC FEVER 1319
F. H. Adams, M.D., Los Angeles

THIOPENTAL SODIUM ANESTHESIA IN INFANTS AND CHILDREN 1321
C. E. Wasmuth, M.D., and D. E. Hale, M.D., Cleveland

CLINICAL NOTES

STOMACH TUBE WITH OBTURATOR FOR DIAGNOSIS OF STOMACH CANCER 1323
A. C. Crump, M.D.; G. C. Hennig, M.D., New York, and Julius Wolf, M.D., Bronx, N. Y.

FATAL CASE OF IRON INTOXICATION IN A CHILD 1326
C. D. Curtiss, M.D., and A. A. Kosinski, M.D., Johnson City, N. Y.

SPECIAL REPORTS

Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES 1328

EDITORIALS

Medical Expert Testimony 1332
Your Directory Information Card 1332
Research in Pathology 1333
The A. M. A. and Federal Legislation 1333

ORGANIZATION SECTION

Third Bituminous Coal Conference 1334
President Eisenhower Receives Lahey Award 1334
County Medical PR Manual 1334
March of Medicine Program 1334
Bermuda-Nassau Cruise Following Next Annual Meeting 1334
New Television Show Begins Dec. 12 1334

REGULAR DEPARTMENTS

Medical News 1335
Meetings 1340
Examinations and Licensure 1341
Deaths 1342
Foreign Letters:
England: Fluoridation of Water. Medical Recruitment in the Armed Forces. Science Meeting at Oxford. Galactosemia. Use of Meparfynol in Labor. Physician Legally Liable for His Deputy. Thyroid Function. International Congress of Midwives. Cancer of the Lung 1345
Finland: Complications Following Ocular Operations. Anoptral Contrast Microscope. Degenerative Changes in the Spine and Back Pain. Extrauterine Pregnancy 1347
Germany: Sick Funds and Social Security. Obstetrics in Germany. "Fresh Cell" Therapy 1348
Peru: Gastric Cancer. Adrenal Stimulation. Treatment of Vitiligo 1348
Turkey: Chemotherapy of Influenza. Effect of Penicillin on Lupus Erythematosus. Cortisone and Corticotropin in Chorea 1349
Correspondence:
Tetanus Immunization. Emotional Aspects of Respiratory Disorders in Coal Miners. Clinical Pathology Standards Program of the College of American Pathologists. Human Rabies. Keratoacanthoma 1350
Bureau of Investigation:
Taking the Contour out of "Kurvon" 1352
The Leisure Corner 1353
Medical Literature Abstracts 1354
Book Reviews 1373
Queries and Minor Notes:
Epididymitis. Alcohol Intoxication in Indians. Night Sweats. Recurrent Aphthous Ulcers. Dehydration and Shock in Infants. Cola Drinks. Relieving Intestinal Distention. Dermatitis in Locomotive Engineer. Persistent Tachycardia in a Child. German Measles. Diagnosis of Epilepsy. Immunization. 17-Ketosteroids in Homosexuals. Hemolytic Anemia in Pregnancy. Coronary Thrombosis. Warts. Diabetes. Syphilis in Octogenarian. Intervals Between Immunization Injections. Rubella and Pregnancy. . . 1374

WASHINGTON NEWS

Nonprescription and Prescription Drugs. Health Insurance Plans. Loyalty in the Public Health Service. White House Subcabinet. Nontaxable Gifts. Reorganization of Division of Special Health Services. Social Security. New Legislation Being Drafted. Expanded Hill-Burton Program. ..... Adv. Page 13
Officers of A. M. A. ..... Adv. Page 18
Tonics and Sedatives ..... Adv. Page 50
Books Received ..... Adv. Page 71
The Bright Side ..... Adv. Page 77
Index to Advertisers ..... Adv. Page 78

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PREVENTION OF ACCIDENTS IN BLOOD TRANSFUSIONS

Alexander S. Wiener, M.D., Brooklyn, N.Y.

The medicolegal aspects of blood transfusion have recently been the subject of a number of detailed reports.[1] It has been pointed out that the performance of a transfusion may be attended by many hazards to the patient. Since blood transfusion has become such an important aspect of surgical and medical treatment, the procedure should be made as free from danger and as foolproof as possible.[2] The purpose of this report is to discuss some of the preventable untoward reactions from blood transfusion and what can be done to avoid them in order to protect the patient from danger and the physician and hospital from unpleasant and costly lawsuits. The fundamental basis of a safe blood transfusion is accurate blood grouping and cross matching tests. The physician giving the transfusion is completely dependent on the laboratory, because mere inspection of the bottle of blood will not help him to determine whether it has been correctly grouped and labeled or whether the patient's blood has been correctly grouped and cross matched. Once blood has been incorrectly grouped and cross matched and released from the laboratory, a hemolytic transfusion reaction is inevitable in certain cases; therefore, these tests should be carried out only by fully qualified persons. The field of blood grouping has become highly specialized, and adequate pretransfusion tests require familiarity not only with the A-B-O groups but also with the Rh-Hr types and such special cross matching methods as the conglutination test, the antiglobulin test, and the proteolytic enzyme test.[3] These tests must be carried out by trained technicians who specialize in this field and not by untrained interns or physicians who have only an incidental interest in the subject. The problem posed by emergency transfusions arising at night, over week ends, or on holidays is best solved by the use of specially trained medical students who are glad to have the opportunity to do this type of work as an aid in meeting their expense at school. An alternative plan is to have the blood grouping tests done at central blood banks, which are in operation at all hours. When grouping and cross matching tests are entrusted to untrained persons, dangerous transfusion reactions are bound to occur. Most of the material presented in this article became available because a house physician attempted to do his own grouping and cross matching tests in the absence of the regular technician. These accidents occurred at a number of different hospitals in the metropolitan area of New York City. At the Jewish Hospital of Brooklyn, where medical students are employed to do emergency pretransfusion tests, there have been no accidents of this type for more than five years.

REPORT OF CASES

CASE 1: *Hemolytic Reaction Caused by Transfusion of Group B Blood to a Group A Recipient.*—A 70-year-old woman with a fractured hip had two pins inserted by a surgeon in a small, private hospital. She was discharged from the hospital, but formation of a local abscess made it necessary to send her back to the hospital a few days later. On readmission her condition was poor, with a temperature of 105 F, rapid pulse and respiration, tense abdomen, cyanosis, and stupor. After 20 hours without improvement, incision and drainage were performed. A blood transfusion was ordered by the surgeon. The regular technician was not on duty, and a new house physician, unfamiliar with the setup in the laboratory, undertook to group and cross match the patient's blood. After 200 cc. of the blood selected by him had been administered, the patient had a chill, and the transfusion was discontinued. The following morning, the regular technician found the patient had group A blood, while the blood selected for transfusion belonged to group B. Apparently, the intern on duty the night before had confused the designations of group A and anti-A serum, and similarly the labels of group B and anti-B serum. The exact nature of the cross matching test carried out by the intern could not be ascertained. There was no anuria and only slight oliguria after the transfusion, but the patient was treated by forcing fluids by mouth, by clysis, and intravenously. Despite the administration of antibiotics, the high temperature continued, and five days later pulmonary edema developed and the patient died. There were no medicolegal repercussions.

From the Division of Immunohematology of the Jewish Hospital of Brooklyn and the Serological Laboratory of the Office of the Chief Medical Examiner of New York City.

Read in the Session on Legal Medicine before the Section on Miscellaneous Topics at the 103rd Annual Meeting of the American Medical Association, San Francisco, June 24, 1954.

1. (*a*) Wiener, A. S.; Grant, D. N. W.; Unger, L. J., and Workman, W. G.: Medicolegal Aspects of Blood Transfusion, report to the Committee on Medicolegal Problems, J. A. M. A. **151**: 1435-1443 (April 18) 1953. (*b*) Unger, L. J.: Dangers Associated with Blood Transfusion, New York J. Med. **51**: 1307-1316 (May 1) 1954. (*c*) James, J. D.: The Legal Responsibility in Blood Transfusion, Lancet **2**: 243-245 (Aug. 1) 1953. (*d*) Blood Transfusion Accidents, Brit. M. J. **2**: 390-391 (Aug. 15) 1953.

2. Wiener, A. S.: "Foolproof" Blood Transfusion, Letters to the Editor, Lancet **1**: 1073 (June 18) 1949.

3. (*a*) Unger, L. J.: Rh-Hr Factors and Their Specific Antibodies, as Applied to Blood Transfusion, Am. J. Clin. Path. **24**: 175-291 (March) 1954. (*b*) Wiener, A. S.: Rh-Hr Blood Types: Applications in Clinical and Legal Medicine and Anthropology, New York, Grune & Stratton, Inc., 1954.

This case demonstrates the danger of permitting blood grouping and cross matching tests to be carried out by house physicians and other persons who do not specialize in this type of work. Since the patient had been in the hospital for 20 hours and her hemoglobin level was 10.5 gm. per 100 cc., there was no urgent need for the transfusion, which could have been given next morning when the regular laboratory staff was available. If the surgeon felt that the transfusion had to be given at night, a specimen of the patient's blood should have been sent to a central blood bank where qualified technicians were available to carry out the grouping and cross matching tests. This would have required no more time than for the house physician to find the keys to the laboratory, locate the typing serum, and carry out the tests. It is doubtful that in this case the transfusion reaction was responsible for the patient's death, because she died of cardiac failure probably resulting from septicemia. If the relatives of the deceased had elected to sue the hospital because of the error in blood grouping, it is doubtful that they would have won their case. In order to win a suit, it must be shown not only that an error has been committed but that this mistake has caused harm to the patient. In the present case, however, the patient hemolyzed the 200 cc. of incompatible blood that was transfused without apparent damage to the kidneys, since at no time was there any marked oliguria or uremia. It should be noted in this connection that, when anuria or oliguria results from a hemolytic reaction, the daily fluid intake should not be permitted to exceed the output by more than 1,000 cc. In this case, the daily excess ranged from 2,000 cc. to 4,000 cc., and this probably contributed to the patient's pulmonary edema.

CASE 2: *Fatal Hemolytic Transfusion Reaction Caused by Transfusion of Group A Blood to a Group B Recipient.*—During an operation for the removal of a polyp of the colon, a patient was given transfusions of 3 units of whole citrated blood. An urticarious eruption appeared on the skin, and the transfusion was discontinued. Whereas previously it had been reported that the patient belonged to group B and all 3 units of blood were also said to belong to group B, it was later found that one of the bottles had been mislabeled and contained blood of group A. As a result, the patient who belonged to group B was believed to have received at least 100 cc. of incompatible blood of group A. The operation was successful, and histological examination of the polyp showed no malignancy. However, oliguria developed in the patient, and a catheterized specimen of urine from the bladder the morning after the operation was said to be "bloody." The patient was given intravenous therapy but failed to improve and died several days later in uremia. At autopsy, the medical examiner found a clean, sutured, surgical incision, with minimal hemorrhages into the wall of the intestine, and microscopic examination showed lesions typical of lower nephron nephrosis, namely, blockage of tubules with hemoglobin pigment, necrosis of some tubules, and edema of interstitial tissues. The medical examiner concluded that the patient had died from an acute nephrosis resulting from the transfusion of incompatible blood. A lawsuit was instituted, and the case was settled out of court for $65,000, paid by the insurance company of the hospital to the estate of the deceased.

Once a bottle of blood has been mislabeled, as in this case, a transfusion accident may be unavoidable. Dr. Lester J. Unger [1b] has devised a method to reduce such clerical mistakes. He uses perforated strips of labels for each of the groups O, A, B, and AB, and for the two types Rh positive and Rh negative. After the group and Rh type of the prospective donor have been determined, the appropriate strips are selected, and labels are pasted on the donor's card, the bottle, and the pilot tubes, thus reducing the chance of clerical errors. An important medicolegal question that arose in this case was whether a professional or an administrative act of negligence had been committed. Since the technician was an employee of the hospital, it was decided that there had been an administrative act of negligence and that the hospital had to bear the entire responsibility for the transfusion accident. When the technician performing the pretransfusion tests is an employee of the physician, the physician would be responsible for any errors in transfusions performed in the physician's office or at a patient's home. If blood is obtained from a blood bank and the bottle is incorrectly labeled, this would not exonerate the physician or his technician. It is considered good practice to regroup every bottle of blood and every professional donor before the transfusion, so that any error in grouping would be picked up by a properly performed cross matching test. Thus, the patient or his family would be justified in holding the physician giving the transfusion responsible for such errors, even though the bottle of blood has been obtained from a blood bank.

CASE 3: *Hemolytic Transfusion Reaction Resulting from Use of "Universal" Donor Blood.*—A 52-year-old man, vomiting blood, collapsed at his office and was taken to a city hospital, where he received an emergency transfusion. The next day he had tarry stools, and a diagnosis of bleeding peptic ulcer was made. Two days later he was transferred to a small, private hospital, and on admission was typed by an intern, who reported him to be group A, Rh negative. As an emergency procedure, the patient was then given three units of group A, Rh-negative blood, and one unit of group O, Rh-negative blood with group A and Group B substances added. After the transfusion of group O, Rh-negative blood, he was said to have had a reaction. The next day an operation was performed, but no bleeding point could be located. At this time he was given transfusions of more group A, Rh-negative blood. However, the hemoglobin level continued to fall, and he was given several more units of Rh-negative blood during the succeeding two days. Since admission the patient had received 9 units (4,500 ml.) of group A, Rh-negative blood and one unit of group O, Rh-negative blood. In view of the failure of the patient to improve, I was requested to investigate the problem five days after the transfusion of group O, Rh-negative blood that had caused the reaction. Blood grouping and differential agglutination tests on the patient's blood showed that it contained a mixture of approximately eight parts A_1 blood cells, one part A_2 blood cells, and one part O blood cells. The O blood cells apparently represented the group O blood received on the day of admission. There was also a mixture of two parts of type Rh_1rh blood, and one part of type rh blood. Since the patient had received nothing but Rh-negative blood by transfusion, the type Rh_1rh blood evidently represented his own blood, so that he was Rh positive and not Rh negative as originally reported. Considering the fact that he had received 10 units (5 liters) of Rh-negative blood, it was somewhat surprising to find so little Rh-negative blood in his circulation. The explanation appeared to be that most of the donors' blood had been hemolyzed by the patient. The presence of a hemolytic anemia was confirmed by further blood tests. The icterus index was 16 units, and blood studies gave the following data: hemoglobin level, 7.8 gm. per 100 cc.; red blood cell count, 2,900,000 per cubic millimeter; white blood cell count, 16,900 per cubic millimeter; platelets, 43,500 per cubic millimeter; reticulocytes, 10%; segmented polymorphonuclears, 57%; band forms, 12%; metamyelocytes, 7%; myelocytes, 3%; lymphocytes, 16%; and monocytes, 5%. There were 12 early and 27 late nucleated red blood cells per 100 white blood cells on the smear. The red blood cells showed marked rouleaux formation, with polychromasia, anisocytosis, and frequent spherocytes. The direct conglutination and the direct antiglobulin tests were both posi-

tive. The patient had a severe hemolytic anemia, and the question arose whether this was an acquired hemolytic anemia caused by autosensitization or the result of the blood transfusions.

The serums of the nine group A, Rh-negative donors were tested, but no Rh antibodies were found. Tests were then carried out on the serum of the group O, Rh-negative donor whose blood had caused the reaction. Titration of the alpha and beta antibodies gave the following results: in saline medium, anti-A (versus A_2 cells), 200 units, and anti-B, 5 units; and in acacia medium, anti-A, 1,000 units, and anti-B, 120 units. Thus, the group O donor was strongly sensitized to the A agglutinogen. Moreover, the donor proved to be sensitized to the Rh factor, with the following Rh antibody titer: agglutination method, negative; blocking test, positive, 6 units; albumin-plasma conglutination method, positive, 70 units; and proteolytic enzyme technique, positive, 180 units. These results revealed a so-called dangerous universal donor, strongly sensitized not only to the A agglutinogen but also to the Rh_0 factor. On my advice no more blood transfusions were given, and the hemolytic process gradually subsided. The hemoglobin level was maintained at 7.5 gm. per 100 cc., the nucleated red blood cells gradually disappeared from the blood smear, and the patient improved. He was discharged from the hospital eight days after the studies just described were carried out. When seen again at the office the following month he seemed cured; the hemoglobin level had risen to 9.7 gm. per 100 cc. and the red blood cell count to 3,500,000 per cubic millimeter, and the white blood cell count and differential were normal. The icterus index was only 2 units, and the direct conglutination and direct antiglobulin reactions had become negative. The patient's blood now typed clearly as A_2 MN Rh_1rh, and his serum contained a high titer of anti-B agglutinins in saline medium, 500 units, and in acacia medium, 2,000 units. This presumably was the result of immunization by the group A and group B blood substances added to the group O blood used for the transfusion.

In the case just described transfusion of "universal" donor blood (group O, Rh negative) gave rise to a severe hemolytic anemia, despite the addition of group A and group B substances. The hemolytic anemia was traced to the presence of potent Rh as well as A antibodies in the serum of the donor. This experience serves to emphasize the importance of using only blood of the recipient's homologous A-B-O group and Rh type for transfusion. Only in dire emergencies is the use of universal donor blood permissible. Although in the present case there were no medicolegal repercussions, it is advisable, whenever group O blood is used for a patient not belonging to that group, for the physician to make an appropriate entry on the patient's chart to justify his action. This case also serves to underline the importance of testing all prospective Rh-negative donors for the presence of Rh sensitization. If the donor is found to be sensitized, his blood should not be used for transfusion purposes. If blood from a sensitized donor is used for an Rh-negative patient, the recipient would become passively sensitized, although for a limited period [3a]; if the blood is used for an Rh-positive recipient, as in the present case, a hemolytic reaction could result. It will also be noted that the initial error in Rh typing had been made by an intern when a qualified technician was not present to carry out grouping and cross matching tests.

CASE 4: *Transfusion of Ten Units of Rh-Positive Blood to an Rh-Negative Recipient, With Resulting Hemolysis but Without Renal Damage.*—A 49-year-old man with signs of an acute intra-abdominal lesion was admitted to a large municipal hospital. At operation, a ruptured spleen was found and removed. Emergency blood grouping tests were carried out by an intern, who reported the blood to be group A, Rh positive. The patient was then given seven transfusions of group A, Rh-positive blood, after which his hemoglobin level rose from 8.5 gm. per 100 cc. to 11.5 gm. per 100 cc. Within a week, however, the hemoglobin level had dropped to 6 gm. per 100 cc., and he was given 3 units (1,500 ml.) more of group A, Rh-positive blood but with no resulting improvement in the blood cell count. His blood was then retyped and found to be Rh negative. At this time a hematocrit was reported to be only 17%, with a yellow supernate, so that the patient must have been mildly jaundiced. Two days later I was requested to check this patient's blood, and I confirmed the fact that he was group A, Rh negative. Moreover, tests for Rh antibodies on his serum showed him to be very strongly sensitized to the Rh factor from the following data: agglutination method, negative; blocking test, positive, 4 units; antiglobulin method, positive, 500 units; and enzyme-treated cells, positive, 1,000 units. Four units of compatible group A, Rh-negative blood were then given to the patient, with a resulting sustained rise in hemoglobin level to 12 gm. per 100 cc. No further blood transfusions were required.

It is remarkable that an Rh-negative patient received and hemolyzed as many as 10 units (5 liters) of Rh-positive blood within a period of a week with no apparent renal damage. No transfusion reactions were noticed, because the postoperative course was characterized by a continuously elevated temperature, up to 103 F every day. The hemolysis produced only a mild evanescent jaundice, and the anemia was corrected only when the situation was recognized and Rh-negative blood was given. There were no medicolegal repercussions. The question is sometimes posed whether it is permissible to give Rh-positive blood to a nonsensitized Rh-negative patient, in order to conserve the supply of Rh-negative blood, or when no Rh-negative blood is available. This would be justified only as a lifesaving measure, and at the Jewish Hospital of Brooklyn, where as many as 5,000 transfusions are given yearly, only two or three occasions arise during the course of the year when it becomes necessary to do so. Even if the patient is not sensitized, transfusion of Rh-positive blood is objectionable, especially for female recipients, since it can bring about Rh sensitization. Moreover, if Rh sensitization is already present and is not detected owing to an error or an inadequate cross matching test, transfusion of Rh-positive blood can cause a severe or even fatal reaction, or, at best, the transfused blood will be hemolyzed without otherwise harming the patient, as in the case cited. Therefore, in all emergencies in which transfusion of Rh-positive blood to a nonsensitized Rh-negative recipient is carried out as a lifesaving measure, the physician should write a justification of his action on the patient's chart as a safeguard against possible medicolegal repercussions.

NEWER BLOOD GROUPS

In recent years it has been found that transfusion of blood of the corresponding A-B-O groups and Rh_0 type is not sufficient to guarantee that a hemolytic reaction will occur. In rare instances, isosensitization to factors other than **A**, **B**, and **Rh_0** has been detected. In fact, as many as 25 different blood factors belonging to more than 10 independent blood group systems have been identified to date, any one of which theoretically could give rise to isosensitization and a hemolytic transfusion reaction. Since blood factors other than **A**, **B**, and **Rh_0** are almost all relatively poor antigens, such instances are rare. For practical purposes it is sufficient to carry out tests merely for the A-B-O groups and **Rh_0** factor alone

and to rely on an adequate cross matching test to detect incompatibilities with respect to other blood factors. This is fortunate, because otherwise it would be necessary to have as many as 50,000 to 100,000 different types of blood available in every blood bank at all times instead of only 8 types. In isosensitized persons, the antibodies most frequently formed are of the univalent (blocking, conglutinating, or "incomplete") type, which are not detected by the ordinary tube or slide agglutination technique. An exception to this rule, in which sensitization to a new blood factor **U** caused a fatal transfusion reaction and in which the antibody in the recipient's serum was demonstrable by the ordinary agglutination method, was recently reported by my co-workers and myself.[4] Therefore, in addition to the classic method of cross matching in saline medium, the prospective donor's red blood cells must be tested with the patient's serum by the conglutination method and/or the proteolytic enzyme or antiglobulin techniques.

The conglutination test is the simplest of the three methods, but the antiglobulin technique has the advantage that it will detect incompatibilities that are not demonstrable by other methods, for example, sensitization to the **F** (Duffy) factor, and **J** (Kidd) factor. Unfortunately, the antiglobulin technique is so lengthy that it is not practicable for routine use. For ordinary work, therefore, the conglutination method of cross matching is used, and the antiglobulin test is reserved for investigating cases in which a transfusion reaction has occurred. The antiglobulin method of cross matching should always be used for any patient whose history suggests the possibility of isosensitization. Since patients with lupus erythematosus and acquired hemolytic anemia have an inordinate capacity to form antibodies, the antiglobulin cross matching test should always be carried out for such patients. One brief report will suffice to illustrate the importance of the antiglobulin cross matching test. This case has been reported in greater detail elsewhere.[5]

CASE 5: *Hemolytic Transfusion Reaction with Uremia Caused by Sensitization to the* **F** *(Duffy) Factor.*—A 59-year-old woman with metastatic cancer was given a blood transfusion that had to be interrupted because of a severe chill. The blood grouping tests were rechecked and showed that the patient and donor both belonged to group O and were Rh positive; moreover, no incompatibility could be demonstrated by either the agglutination or the conglutination technique. Two days later the patient was given another transfusion, and this time she had a hemolytic reaction characterized by a severe chill and a rise in temperature to 104 F, associated with marked hemoglobinemia and hemoglobinuria and followed by oliguria. Tests by the antiglobulin technique then revealed the presence of a potent antibody in the patient's serum of 500 units titer, having the specificity anti-**F.** As to be expected, the patient belonged to type ff, while the two donors whose blood had caused the reactions both belonged to type F. Subsequent transfusions of compatible type ff blood were then given, without any untoward reaction.

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6. Pittman, M.: Psychrophilic and Other Bacterial Contaminants from Human Blood and Plasma, read before the Fifth Annual Meeting, American Association of Blood Banks, Milwaukee, Oct. 9, 1952.

7. Stevens, A. R., and others: Fatal Transfusion Reactions from Contamination of Stored Blood by Cold Growing Bacteria, Ann. Int. Med. **39**: 1228-1239 (Dec.) 1953.

8. Traub, F.: Personal communication to the author.

CONTAMINATED BLOOD

The introduction of blood banking, which has saved many lives by making blood readily available, has at the same time introduced certain new hazards into blood transfusion practice. The most important is the danger of transfusing blood contaminated by bacteria. Despite the use of expendable sterile equipment and despite scrupulous aseptic precautions, it is inevitable that in a certain number of instances bacteria will be picked up from the deeper layers of the donor's skin during the bleeding. The degree of contamination that results is fortunately harmless, as a rule, but there are bacteria that have the capacity to multiply at low temperature in the refrigerator.[6] When large numbers of such bacteria are present in transfused blood, they can give rise to severe or even fatal reactions,[7] as in the cases described below. In 1951 I was consulted concerning a problem, which arose in a hospital in the New York City area, that involved three bottles of blood obtained from a central blood bank. All three specimens of blood had been drawn on the same day. The blood from the first bottle was 10 days old when used for a male patient who had a bleeding duodenal ulcer. During the preceding two weeks he had received 1,500 cc. of blood without reaction. One hour after the transfusion in question was started, when the patient had received 300 cc. of blood, a reaction, characterized by chill and high temperature, occurred. After the chill, the patient went into shock, and anuria developed. Another transfusion was given in an attempt to revive the patient, but he died the next day. The blood from the second bottle was 14 days old when used. The male recipient had acute myeloid leukemia. In this case the reaction started when the patient had received only 30 cc. of blood. The patient had an immediate reaction consisting of a severe, shaking chill, headache, backache, and pains in the legs, with a rise in temperature to 105.6 F. The patient died the day after the transfusion. Examination of the blood in the third bottle showed it to be hemolyzed, so it was not used. Grouping and Rh-Hr tests showed the first patient and donor both to be group O, Rh positive, and there was no incompatibility on cross match. Similarly, there was no incompatibility in the second case, in which both patient and donor were found to be group A, Rh positive. All three bottles of blood had also been submitted for examination. Direct smears from each of them showed innumerable gram-negative bacilli, and cultures showed the presence of bacteria of the Pseudomonas group. It was concluded that the fatal reactions were due to the use of heavily contaminated blood.

In the cases that have just been described the accidents could have been avoided by the simple expedient of microscopically examining a stained film of the bank blood before using it. The routine examination of such smears for bacteria have been objected to on the grounds that it is necessary to enter the bottle, and each time the bottle is entered there is an additional chance of bacterial contamination. This objection is not valid if the examination is carried out immediately before the blood is used. According to Traub,[8] as many as 10^6 bacteria per cubic centimeter must be present for them to be demonstrable on smear. Therefore, it is argued that examina-

tion of the smear has little or no value, and, besides, stained particles of fibrin may be mistaken for bacteria. This argument also is not valid, because in the fatal accidents contamination is generally so gross that the bacteria are readily demonstrable on smear,[7] as in the cases just described. Besides, it is better to waste a bottle of good blood than to transfuse a bottle of questionable blood. Most of the reports of fatal reactions from transfusion of contaminated blood have involved relatively nonpathogenic gram-negative bacilli. The high toxicity of the blood is due to the vast number of bacteria transfused, with the resulting release of endotoxins. The bacteria generally are nonpathogenic bacilli that have the capacity to grow at low temperature, namely, so-called psychrophilic bacteria.[9] There appears to be a long time lag before the bacteria begin to multiply in large numbers. This is indicated by the fact that almost all the fatal reactions involve blood that has been stored for a period of more than two weeks.[7] Therefore, by limiting the period of storage, the chance of a serious reaction can be reduced, despite the inevitable presence of contamination in a certain number of the blood specimens drawn.

At the Jewish Hospital of Brooklyn, storage of blood is limited to 14 days or less, although the regulations of the National Institutes of Health and New York City Department of Health permit the use of blood stored for periods up to 21 days. Moreover, whenever possible, a specimen of blood is removed from the bottle immediately before transfusion and centrifuged. The supernatant plasma is examined for hemolysis, and, at the same time, a smear is examined for bacteria. When it is not certain whether the blood will be used, as, in operative cases, this step has to be omitted, to avoid contaminating the bottle of blood. If a transfusion reaction occurs, the transfusion is immediately discontinued and any blood remaining in the bottle subjected to bacteriological examination. Although as many as 5,000 transfusions are given every year, there are usually no more than 50 reactions, and among these less than 10% of the cultures are positive. Moreover, in the cases in which the bacteriological examinations are positive, the degree of contamination is so mild, as a rule, as to be harmless. The reactions generally subside quickly, and if it were not for the positive cultures, they would be passed by as ordinary pyrogenic reactions.

HOMOLOGOUS SERUM JAUNDICE

One of the most important unsolved problems relating to blood transfusion is the danger of transmitting hepatitis. A healthy person who gives no history of hepatitis or jaundice and no clinical or laboratory evidence of liver disease may nevertheless be carrying the virus of hepatitis in his blood. Transfusion of such blood or the injection of quantities as small as 2 cc. may serve to infect the recipient.[10] Injections of blood from certain carriers of the virus may produce a virulent and fatal form of hepatitis. It has been estimated that this complication is a result of blood transfusion in 1 out of 500 cases. Since there is no way of preventing it, hepatitis must, at the present time, be considered one of the calculated risks of blood transfusion. The ever-present possibility of this complication should cause physicians to pause and consider whether blood transfusion is really necessary and indicated, before resorting to this type of therapy. Most of the reported instances of homologous serum jaundice have resulted from transfusions of plasma. The policy of pooling large numbers of units of plasma was introduced in order to dilute and neutralize isoagglutinins, so that plasma could be used for recipients of any blood group, and thus eliminate the need for preliminary blood grouping tests. Unfortunately, this also increased the danger of transmitting hepatitis, since one infected donor can contaminate a large pool. It was found that hepatitis developed in 12% of the recipients of pooled plasma during World War II and a surplus plasma in civilian hospitals after the war. Recent experience in the Korean war has shown that ultraviolet radiation is not a dependable method of destroying the virus.

The process of freeze-drying plasma in order to preserve it unfortunately helps preserve the hepatitis virus. It has been found that plasma stored in liquid form at room temperature for periods of six months or longer is safer, since the virus tends to die as the plasma ages.[11] Thus far, experimental work on homologous serum jaundice has been hampered by the inability to transmit the disease to experimental animals, so the only resort is to the use of human volunteers.[10] At the present time, whenever the use of plasma is essential, pooled plasma that has been stored in liquid form at room temperature for at least six months appears to be the safest to use. If the plasma must be stored in the frozen state or freeze dried, as for treatment of hemophilia, individual units, rather than pooled plasma, should be used; for example, the Hemophilia Foundation in New York City uses such individual frozen units of plasma, and only group-specific plasma is given to each recipient. Though in recent years some progress has been made in the prevention of homologous serum jaundice, there still is no reliable test to detect carriers of the virus, and such carriers can be detected only by the use of human volunteers. Thus, hepatitis must still be considered one of the calculated risks of blood transfusion.

SUMMARY AND CONCLUSIONS

The surest safeguard against hemolytic transfusion reactions caused by blood group incompatibility is to have the pretransfusion grouping and cross matching tests performed by specially trained persons. For a properly functioning transfusion service, qualified persons must always be available. Aside from errors in blood grouping, the greatest dangers to the patient are from clerical errors, ignorance, inexperience, or sheer carelessness. Every person concerned in a blood transfusion is responsible for reading all labels to be certain blood is transfused only to the patient for whom it is intended. The use of "universal" donor blood should be reserved for dire emergencies only, and, in such cases, the transfu-

9. Pittman.[6] Stevens and others.[7]

10. Neefe, J. R., and others: Carriers of Hepatitis Virus in the Blood and Viral Hepatitis in Whole Blood Recipients, J. A. M. A. **154**: 1066-1074 (March 27) 1954.

11. Allen, J. G.; Enerson, D. M.; Barron, E. S. G., and Sykes, C.: Pooled Plasma with Little or No Risk of Homologous Serum Jaundice, J. A. M. A. **154**: 103-107 (Jan. 9) 1954. Murray, R.; Rather, F.; Diefenbach, W. C. L., and Geller, H.: Effect of Storage at Room Temperature on Infectivity of Icterogenic Plasma, ibid. **155**: 13-15 (May 1) 1954.

sionist must be prepared to vindicate his action, should a reaction occur. Cross matching tests must be done routinely by the conglutination and the agglutination methods. Moreover, for recipients who may have been sensitized by previous transfusions or pregnancies, the antiglobulin cross matching test must be carried out in order to detect incompatibilities with respect to blood factors such as Kell, Duffy, and Kidd. Transfusion of contaminated blood and transmission of homologous serum jaundice are two of the calculated risks of blood transfusion. The danger of transfusing contaminated blood can be minimized by limiting the period of storage to 14 days and by microscopically examining a stained smear of the blood from the bottle immediately before the transfusion. There is no reliable test to detect carriers of the hepatitis virus. The danger of hepatitis from pooled plasma can be reduced by storing the plasma in liquid form at room temperature for six months or longer before use, or, better, by avoiding pooling and using only group-specific plasma. Since blood transfusion has many associated hazards, physicians should not prescribe this type of treatment unless it is definitely indicated and essential for the patient's recovery.

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TRAUMA, STRESS, AND CORONARY THROMBOSIS

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Under the workmen's compensation laws that prevail throughout most of the United States, the disability or death of an employed person when caused or contributed to by an occupational misadventure entitles him or his dependents to financial compensation. Thus, in the case of disability or death of an employed person from heart disease, compensation is usually awarded if it can be established that the heart disease was caused, accelerated, or made worse by an occupational injury. Each year many thousands of employed persons receive occupational injuries, and each year many thousands of employed persons become disabled or die as a result of heart disease. It is to be expected that many claims for compensation have been and will continue to be made on the basis that cardiac disability or death occurred from and was caused or contributed to by an occupational injury. It is true that mechanical violence and its complications may damage the heart. It is equally true, according to the laws of chance, that in many persons cardiac disability will develop after injury even though there is no causal relationship between the two events.

The types of heart disease most frequently involved in such medicolegal problems are those associated with coronary insufficiency. It is usually claimed either that (1) the injury or its complications affected the coronary arteries, whereby there was interference with coronary blood flow, which in turn led to heart failure, or (2) the injury or its complications caused the heart to fail by imposing an excessive work load on it. In certain circumstances and by certain mechanisms either type of causal relationship may exist. The problem in issue is not whether it is possible for an injury to cause or contribute to coronary insufficiency or to heart failure but rather the criteria for evaluating in any given instance the degree of probability that such a causal relationship exists. Most of the recent literature on this subject has dealt largely with clinical evidence and often with little regard to what is known either about the pathological changes induced by trauma or about the pathogenesis and the pathological anatomy and histology of arteriosclerotic heart disease. Because of this deficiency a consideration of the problem in relation to the known effects of mechanical violence on the body and in relation to what is known about the cause and pathogenesis of the lesions of arteriosclerotic heart disease might be useful. Trauma may damage the heart by either of two mechanisms. In one, the effects are direct, in the sense that the disruptive forces of the original impact, whether it be blunt or penetrating, are transmitted directly and immediately to the heart. The external site of such injuries is usually the thorax. In the other, the mechanism is indirect in that the heart is damaged by the systemic disturbances secondary to the trauma rather than by the original direct effects of mass in motion. Injury to any part of the body may in appropriate circumstances elicit systemic disturbances that in turn damage the heart.

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DIRECT INJURY TO THE HEART

The various kinds of direct injury of the heart that may result from trauma to the thorax are summarized in figure 1. A blow to the precordium may cause disturbances of cardiac function through commotion, contusion, or laceration.

Commotion.—The postmortem examination of persons who died of heart failure immediately after and presumably because of a blow to the precordium sometimes fails to disclose gross or microscopic evidence of cardiac injury. Such an event is appropriately characterized as fatal cardiac commotion. Immediate nonfatal and transient disturbances of cardiac rate and rhythm are sometimes observed after a precordial impact. Postmortem examination of experimental animals with such post-traumatic functional disturbances may fail to disclose any structural evidence of cardiac injury. In the absence of such evidence it seems reasonable to ascribe such disturbances also to cardiac commotion. There is no clinical, pathological, or experimental evidence to indicate the occurrence of any permanent ill-effects after nonfatal cardiac commotion.

Contusion.—A blunt or crushing injury of the chest may bruise the myocardium. An impact against the heart of sufficient violence to produce a myocardial bruise may cause immediate cardiac standstill; however, myocardial

contusion is not necessarily fatal nor, for that matter, is it necessarily symptomatic. Postmortem examination of persons who survived thoracic trauma for several days without clinical evidence of cardiac disturbance and who subsequently died of other effects of the injury sometimes discloses unsuspected bruising of the heart. There is no reason to suppose that a myocardial bruise, the location or size of which causes it to be asymptomatic in the immediate post-traumatic period, is likely to result in any permanent or progressive damage to the heart. Although the possibility that cardiac contusion may lead to persistent rather than transient disturbances in rate and rhythm cannot be categorically denied, there is no postmortem

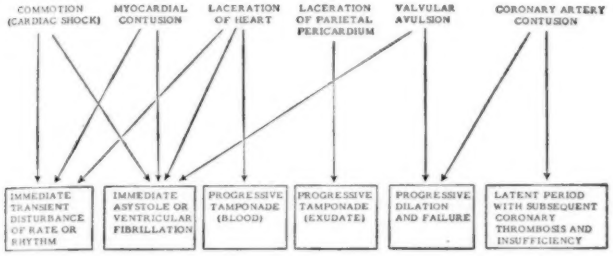

Fig. 1.—Direct injury of heart by blunt and penetrating injuries to thorax.

pathological evidence to support the idea that such a contusion can cause chronic cardiac disability. Contusion, like commotion, is usually an all-or-none phenomenon, in that its functional effects on the heart are usually immediately fatal or transient and inconsequential.

Laceration.—Occasionally the heart is lacerated by the explosive effects of a blunt impact, particularly by the kind of impact that occurs incident to a high fall. As far as postmortem evidence in man is concerned, a laceration of the heart from a blunt impact is likely to be almost immediately fatal. In experimental animals, cardiac laceration by a blunt impact may be survived for as many minutes as is required for the development of tamponade or exsanguination. Cardiac laceration by a penetrating object, such as a knife, a bullet, or the broken end of a rib, may result in only a transient disturbance in rate or rhythm of a person's heart or may be almost immediately fatal and is invariably followed by intrapericardial hemorrhage that may or may not lead to tamponade. Penetrating injuries of the thorax occasionally lacerate the parietal pericardium without damaging the heart. The most significant complication of such an injury is pericarditis. After such an injury, purulent exudate may collect in the pericardial sac with sufficient rapidity to cause tamponade.

Valvular Avulsion.—The rapid displacement of blood incident to a blunt or crushing injury in the precordial region may lacerate the cardiac valves. The valves most commonly involved in such injuries are the aortic and mitral. The usual consequence of an injury of such severity is immediate death from asystole or ventricular fibrillation. Occasionally such an injury is not immediately fatal, and it results in acute and severe valvular insufficiency with progressive cardiac dilatation and failure.

Coronary Artery Contusion.—Occasionally, when thoracic trauma has been followed by an anginal attack or by the development of a myocardial infarct, it is possible that a superficial segment of a coronary artery may have been bruised and that thrombosis of the artery resulted from the contusion. There is nothing to support the occurrence of such a causal relationship other than the fact that some persons do manifest clinical evidence of coronary insufficiency after thoracic trauma. The major branches of the coronary arteries are distributed on the surface of the heart in such a manner that the only circumstance in which they can be damaged by a blunt impact is when the thoracic cage is fractured and a coronary artery has been bruised or lacerated by the inwardly driven end of a broken bone. From the many thousands of autopsies I have performed on persons known or suspected to have died of violence, the only example of coronary artery contusion I have observed was one in which the arterial injury was caused by a bullet. The almost-spent bullet had penetrated the parietal pericardium and had come to rest in the myocardium near the atrioventricular sulcus adjacent to the circumflex branch of the left coronary. Several years later the person died of unrelated causes and was found to have an organized thrombus in the segment of the coronary against which the bullet rested. Since the coronary arteries of this person were elsewhere normal, the thrombus had probably formed at this site because of the previous injury. Although it is probable that a blunt injury to any part of the body may in certain circumstances predispose to coronary thrombosis, the mechanism is rarely, if ever, that of arterial contusion.

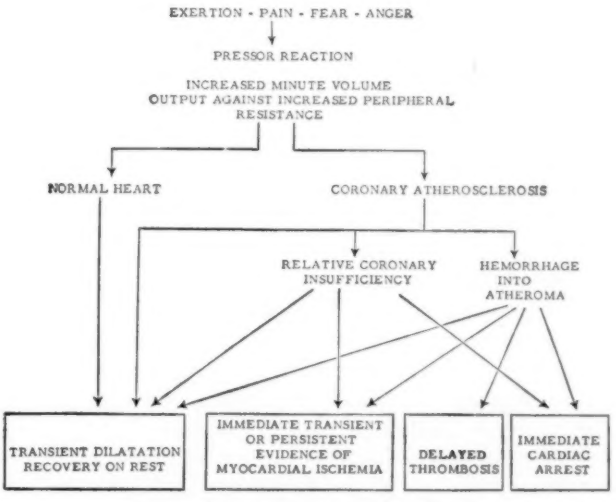
EXERTION - PAIN - FEAR - ANGER
PRESSOR REACTION
INCREASED MINUTE VOLUME OUTPUT AGAINST INCREASED PERIPHERAL RESISTANCE
NORMAL HEART
CORONARY ATHEROSCLEROSIS
RELATIVE CORONARY INSUFFICIENCY
HEMORRHAGE INTO ATHEROMA
TRANSIENT DILATATION RECOVERY ON REST
IMMEDIATE TRANSIENT OR PERSISTENT EVIDENCE OF MYOCARDIAL ISCHEMIA
DELAYED THROMBOSIS
IMMEDIATE CARDIAC ARREST

Fig. 2.—Injuries to the heart from stress.

CORONARY INSUFFICIENCY DUE TO SECONDARY OR INDIRECT EFFECTS OF TRAUMA

Stress.—Pathologists who have had the experience of performing autopsies and reviewing case histories from the coroner's or medical examiner's office in an urban area are well aware that an episode of stress, whether it results from exertion, pain, or emotional excitement, may precipitate a state of acute coronary insufficiency in a person whose coronary arteries are narrowed by atherosclerosis. The effects of stress on the heart are summarized in figure 2. The work of the heart may be significantly increased as a result of an episode of physical exertion or emotional excitement. During such an episode there is characteristically an increase in the rate

and amplitude of the heartbeat as well as in the systolic blood pressure. There is no evidence to indicate that a pressor episode of this type ever causes any permanent damage to a normal heart. Such an episode, however, may precipitate the failure of a heart in which the coronary arteries are narrowed by disease or in which the myocardium has been damaged by previous episodes of coronary insufficiency. It is not necessary for either the coronary disease or the myocardial damage to have been previously symptomatic. If the work load imposed on such a diseased heart is not in excess of its reserve, the resulting cardiac dilatation is physiological and transient. If the work load is such as to create an oxygen requirement in excess of what the diseased coronary vessels can supply, an attack of angina pectoris or of heart failure may be precipitated. Angina pectoris alone does not indicate that the hypoxic myocardium has sustained irreversible injury. If neither the angina nor the cardiac dilatation precipitated by the stress persists, there is no reason to believe that the heart has suffered any permanent damage from the event. If heart failure or an attack of coronary insufficiency manifested by angina is to be attributed to an episode of exertion or excitement it should occur during or immediately after the episode in

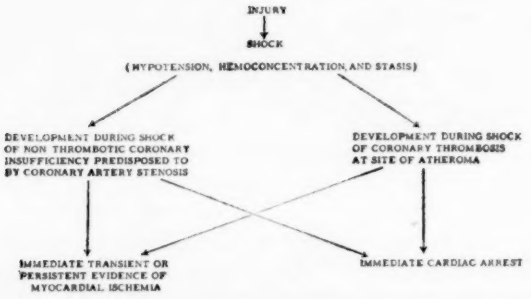
INJURY
SHOCK
(HYPOTENSION, HEMOCONCENTRATION, AND STASIS)
DEVELOPMENT DURING SHOCK OF NON THROMBOTIC CORONARY INSUFFICIENCY PREDISPOSED TO BY CORONARY ARTERY STENOSIS
DEVELOPMENT DURING SHOCK OF CORONARY THROMBOSIS AT SITE OF ATHEROMA
IMMEDIATE TRANSIENT OR PERSISTENT EVIDENCE OF MYOCARDIAL ISCHEMIA
IMMEDIATE CARDIAC ARREST

Fig. 3.—Mechanism by which post-traumatic shock may result in severe myocardial ischemia (infarction or death) in a person whose coronary arteries are the seat of atheromatous change. Such a person may or may not have had previously recognized coronary insufficiency.

question. With each hour that intervenes between the pressor episode and the development of signs or symptoms of coronary insufficiency, the probability of a cause-and-effect relationship between the two diminishes.

The finding of coronary thrombosis with or without myocardial infarction at postmortem examination of the body of a person who collapsed and died during or immediately after an episode of stress cannot be construed as evidence that either lesion was caused by the events with which death was associated. Microscopic examination of such lesions almost invariably establishes the fact that the thrombus or the infarct, or both, had started to develop hours or days before death occurred and, therefore, could not have been caused by the terminal episode of stress. Clinical records and pathological studies in routine autopsies reveal that many episodes of coronary thrombosis with or without infarction are not recognized at the time of their occurrence. A person with such an unrecognized coronary occlusion with or without infarction is prone to unexpected spontaneous collapse and death. Usually the surprising feature of such an occurrence is why the person lived as long as he did rather than why he died. Frequently it is difficult or impossible to evaluate the significance of the particular episode of stress or injury that the disabled person stipulates as the precipitating cause of his disability. If the event stipulated is clearly unusual and if it was followed immediately by cardiac failure, the relationship may be reasonably clear. Often the event stipulated is not sufficiently unusual to distinguish it from other nonoccupational stresses that may have occurred about the same time. Thus, it may be alleged that coronary insufficiency or heart failure was precipitated by lifting a 40 lb. box from an overhead shelf. Such an exertion may have been no greater than that of sneezing or straining at stool, either or both of which events may have had about the same relationship to the onset of cardiac disability as did the stress of lifting the box. In circumstances of this type no one can assert with propriety that any one of these episodes of stress was more likely than any other to have provided the excess work load that caused the diseased heart to fail. If the stress was clearly severe and if the onset of heart failure was immediate, the probability of a causal relationship can scarcely be denied.

Hemorrhage into an Atheromatous Plaque.—The discussion in the foregoing paragraphs has concerned the circumstances in which a pressor episode elicited by injury, exertion, or excitement may cause a diseased heart to fail by imposing an excessive work load upon it. Another possible complication of a pressor episode that may result in coronary insufficiency is the occurrence of hemorrhage into an atheromatous plaque in a coronary artery. For many years it has been recognized that the plaques in atherosclerotic coronary arteries are often richly vascularized, that the newly formed capillaries in such plaques are often thin walled and inadequately supported by the lipid debris that surrounds them, and that many of these capillaries are in direct communication with the lumen of the diseased artery. Spontaneous rupture of such a capillary with escape of blood into the plaque in which it is contained may cause the plaque to swell, with resulting narrowing of the lumen and coronary insufficiency. Although such subintimal hemorrhages usually develop spontaneously, they sometimes occur during an episode of stress and possibly because of the sudden and severe increase in blood pressure elicited by it. That a pressor episode may cause capillary rupture in these circumstances is plausible, and the probability of a cause-and-effect relationship between an episode of stress and coronary insufficiency can be defended if the stress is authentic and if it is followed almost immediately by coronary insufficiency that was demonstrated at autopsy to have been the result of a recent subintimal hemorrhage. It is possible, of course, that a pressor-induced hemorrhage of this kind may fail to cause immediate coronary insufficiency and that many hours or even several days may elapse before the subintimal bleeding or the local reaction to it has progressed to the point of occluding the lumen of the artery. Although such a delay between stress and coronary insufficiency due to rupture of subintimal capillaries is a theoretical possibility, no such causal relationship can be established by clinical evidence alone. In view of the opinions so frequently expressed by medical witnesses in cases of this kind, the need for distinguishing possible from probable causal relationship cannot be overempha-

sized. Almost any conceivable biological sequence is possible. To hold that any given sequence is probable requires evidence that tends to make no other explanation equally acceptable to the one being proposed.

Post-Traumatic Shock and Coronary Insufficiency.—The development of coronary insufficiency during shock is one of the least controversial sequences in the problem of trauma and heart disease. This relationship is summarized in figure 3. If an injury is sufficiently severe to be followed by hypovolemic shock with hypotension and vascular stasis, the myocardium, like all other tissues of the body, suffers from hypoxia. If the myocardium of such a person is at a disadvantage because of narrowed and rigid coronary arteries, it is especially vulnerable to systemic hypoxia. In the presence of coronary stenosis the level of blood pressure required to provide an adequate flow of blood to the myocardium is in all probability considerably greater than would be needed if the coronary artery were normal. Thus, when the blood pressure of a person with coronary disease falls below a certain critical level, coronary insufficiency with thrombotic or nonthrombotic infarction may occur. It is of interest that nonthrombotic infarcts of this type are frequently limited to the deep subendocardial layers of muscle. Although the coronary insufficiency that occurs during shock is often nonthrombotic, this is not invariably the case. Thrombosis during shock may take place at sites of lumen narrowing and is presumably partially contributed to by the already established intimal disease and partially by the circulatory stasis of shock. Such a thrombus may be rapidly fatal or may result in infarction with varying degrees of residual cardiac disability.

SUMMARY

The heart, whether it is normal or diseased, may sustain injury by the direct and immediate effects of mechanical violence. Evidence from postmortem examination of persons known or suspected to have died a violent death indicates that coronary thrombosis is rarely the direct result of trauma and that the contention that such was the case is probably never tenable unless supported by the type of facts that can be obtained only by postmortem examination. In the presence of coronary atherosclerosis various secondary effects of trauma or stress are probably capable either of inducing a state of coronary insufficiency or of causing the heart to fail by imposing an excessive work load on it.

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MEDICOLEGAL ASPECTS OF STERILIZATION, ARTIFICIAL INSEMINATION, AND ABORTION

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Medicolegally speaking, operations to produce sterility may be contemplated or performed for one of three reasons: eugenic, therapeutic, or nontherapeutic. What civil or criminal liability is incurred by the physician who, for one of these three reasons, performs such an operation? Twenty-nine states [1] have enacted legislation that provides for the sterilization of the socially inadequate. This legislation is a study in itself [2] and cannot briefly be summarized. Generally it may be said, however, that it designates the classes of persons to which it applies, persons who for practical purposes may be included in one of five groups: feeble-minded, insane, epileptic, habitual criminals, or moral degenerates. This legislation, in the main, applies to those portions of the enumerated classes of defective persons that are confined in specified institutions. Consent and due process of law are aspects of this legislation that should be considered locally according to the law of each jurisdiction. In these states, it seems clear, the physician who operates to produce sterility under the terms of the law and in accord with its requirements need anticipate neither civil nor criminal liability for his action. The procedure is adopted and conducted by the state; the physician is but one of the participants in the action. In states with no such eugenic sterilization statutes the physician's legal responsibility for performing a eugenic sterilization is moot.

STERILIZATION

Statutes in a number of states and the weight of legal authority support the proposition that operations to produce sterility, when necessary for therapeutic reasons, may lawfully be performed. This view is substantiated in the case *Christensen* v. *Thornby,* 255 N. W. 620 (Minn., 1934). In this case, the attending physician felt that his patient's health contraindicated future pregnancies, and the matter was discussed with the patient's husband. Because of the relative simplicity of the operation it was agreed that the husband would submit to a vasectomy, and one was performed. A future pregnancy did result, however, and a healthy baby was delivered without any detriment to the mother. The husband sued the operating surgeon for damages and based his action on the failure of the operation to fulfill the surgeon's promise. The trial court sustained a demurrer to the plaintiff's complaint on the ground that the contract and the performance of the operation were against public policy and that the law should leave the parties where they placed themselves. One question before the Supreme Court of Minnesota was, therefore, whether a contract to perform such an operation under the circumstances was against public policy and for that reason void. The court said, "We are not here confronted with the question of public policy as applied to sterilization where

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1. Alabama, Arizona, California, Connecticut, Delaware, Georgia, Idaho, Indiana, Iowa, Kansas, Maine, Michigan, Minnesota, Mississippi, Montana, Nebraska, New Hampshire, North Carolina, North Dakota, Oklahoma, Oregon, South Carolina, South Dakota, Utah, Vermont, Virginia, Washington, West Virginia, and Wisconsin.

2. Hughes, J. E.: Eugenic Sterilization in the United States: A Comparative Summary of Statutes and Review of Court Decisions, Pub. Health Rep. Supp. 162, 1940.

no medical necessity is involved. Aside from the statutes in the few states that have prohibited it, we find no judicial or legislative announcement of public policy against the practice of sterilization. Certainly, even in those states with the statutory prohibition, the exception of medical necessity would justify the operation here alleged." The court held that under the circumstances of the case the contract was not void as against public policy nor was the operation illegal on that account. In a California case, *Danielson* v. *Roche et al,* 241 P. (2d) 1028 (Calif., 1952), a physician was sued for damages for having removed portions of both of a patient's fallopian tubes after an appendectomy. Evidence disclosed that patient's condition had been diagnosed as appendicitis and salpingitis. She entered the hospital for an appendectomy, and before surgery she executed a consent to any operation that "may now or during the contemplated services be deemed advisable or necessary." During the operation it was found that both fallopian tubes were full of pus, and the physician removed the diseased portions. The appellate court pointed out that uncontradicted evidence disproved the plaintiff's allegation that no medical or surgical emergency existed for this procedure, and the plaintiff's action against the physician for assault and battery did not prevail.

A person of mature years and sound mind can ordinarily give consent to an operation on himself. The parent of a minor child can give consent to an operation on the child. Except in the gravest emergency an operation should not be done without some such consent. The right to give such consent is limited, however, by the interest of the state in the welfare of its citizens. A person cannot submit to nor can a parent subject a child to an operation that will jeopardize life without an adequate end in view. The state has an interest, too, not merely in the preservation of the individual but also in the perpetuation of its people through the bringing forth and nurturing of children. The same public policy that underlies laws to prevent contraception and criminal abortion applies to operations that produce sterility, even though that policy is expressed in few statutes specifically forbidding such operations. At least three states, Connecticut,[3] Kansas,[4] and Utah,[5] by statute, have declared operations for the purpose of destroying the power to procreate the human species unlawful unless the same shall be a medical necessity. And one appellate court in New York has stated in an opinion [6] upholding a ban on a showing of a film on sterilization, "The content of the picture is devoted to an illegal procedure."

In the absence of specific statutes and court decisions on the subject, the circumstances in which a person can give a valid consent to an operation of this kind are not too clear. While consent is doubtless valid if the operation is necessary to relieve or cure some existing disease or safeguard the life of the patient, the validity of consent to an operation not required for any therapeutic reason nor performed in accord with statutes relating to eugenic sterilization would at least be open to question.

3. Gen. Stat. of Conn. t. 30, c. 200, s. 4183.
4. Gen. Stat. of Kan., 1949, c. 76, s. 76-155.
5. Utah Code Anno., s. 64-10-12.
6. *Foy Productions* v. *Graves,* 3 N.Y.S. (2d) 573, (N.Y.).
7. 21 Atty. Gen. (Wis.) 940.

In 1932 the Office of Attorney General of Wisconsin was called on to render an opinion with respect to the legality of such operations. The opinion [7] in part states, "Even if we assume that the scientific and sociological view should prevail, nevertheless, the law follows science, in some fields by perhaps a generation, for the law can reflect the advances of science only when they have been accepted by the people generally. . . . The consequence to a physician from the performance of an operation of this kind should the courts hold it illegal could be serious. Until the law is settled, it is not prudent for a physician to perform a sterilization operation, except within the ancient field of surgery, viz., when it is a therapeutic measure." The law is still not settled, and the question of the physician's legal liability for the performance of an operation to produce sterility in the absence of therapeutic necessity or according to eugenic sterilization statutes is not clear. In any case, the physician before proceeding with any operation that will produce sterility should obtain from the patient or his parent and from the spouse of a married patient written consent in a form that shows the patient, parent, and the spouse, if his or her consent is required, consents with the full knowledge of the purpose of the operation and of its effects.

ARTIFICIAL INSEMINATION

There is little that can be said with any degree of assurance concerning the medicolegal aspects of artificial insemination, for such aspects have not been explored satisfactorily by any court of appellate jurisdiction in the United States. Physicians and lawyers alike seek answers to the many questions that may arise concerning a situation not known to the common law and not now covered by specific statutory provisions: questions relating to legitimacy, to inheritance, to liability in connection with the selection of donors, and others.

If the donor is the husband of the woman inseminated artificially, the application of the ordinary laws relating to malpractice would probably be sufficient to protect the rights of all parties. The child, if one results, will unquestionably be legitimate; and if the physician exercises due diligence, uses ordinary knowledge and skill and his best judgment, and respects the confidence of his patient, he will not be liable for damages even though the resulting baby be defective. What constitutes due diligence and ordinary knowledge and skill will depend on the accepted practice at the time in the community in which the artificial insemination is performed or in a similar community among physicians engaged in or representing themselves as willing to engage in the artificial insemination of would-be mothers.

When the physician uses semen from a donor other than the husband there is a possibility that complications may arise. In such cases the law must be applied to a novel situation, but certainly the physician assumes a certain degree of responsibility as to the suitability of the donor. In selecting a donor, or in passing judgment on the fitness of a donor offered by a woman who wishes to be artificially impregnated or by her husband, the physician assumes responsibility the nature and limits of which have not been determined by statutory law or defined by the courts. What the law requires of him in a way of investigation of the suitability of a prospective

donor, from the standpoint of heredity and present physical condition, and how far he will be held liable for errors of judgment in vouching for the fitness of the proposed donor, no one can say with any degree of certainty.

How far the courts will recognize a right on the part of a woman who is to be inseminated and of her husband to assume by express contract the risks of unsatisfactory results owing to the donor being unfit is impossible to say. A patient may by express agreement relieve a physician of some but not all of the obligations imposed on him by the usual implied contract for medical services. How far the law will permit a woman or her husband to assume the risks of the fitness of a donor, which is a matter that is or should be peculiarly within the knowledge of the physician, is uncertain.

Because criminal statutes are strictly construed, it is doubted by some that a medical procedure such as this, performed privately with the consent of all concerned, violates statutes relating to adultery or rape. Others believe, however, that the operation does constitute adultery, because the child that results from heterologous artificial insemination is conceived outside of the marriage relation and is not a child of a wife and her husband. In civil law it may be doubted that a child so conceived, even with consent, would satisfy a requirement of will or deed requiring for its execution "lawful issue of his body" or "heirs of his blood." It may be questioned whether such issue is the grandchild of the paternal grandparents.

Distinct difference of opinion exists concerning the legality of heterologous insemination and the legitimacy of resulting children. Reconciliation of these opposite points of view is difficult. The extent of a physician's responsibility in selecting a donor and performing this operation, if it is performed, is uncertain. A physician before undertaking the procedure will act wisely if he advises the husband and wife of the legal implications or uncertainties of the operation as it affects them and as it may affect the child's status at law.

ABORTION

Legally abortion has been defined as the "expulsion of the foetus at so early a stage of uterogestation that it has not acquired the power of sustaining an independent life." [8] By statute each of the several states has, in substance, provided that the performance of an abortion without therapeutic justification is unlawful. Differences exist, as may be expected, in the language of the several statutes and in the manner of their implementation. For example, some statutes require that the initial determination of therapeutic necessity be supported by the advice of another physician. Other statutes require the advice of two other physicians, and some statutes do not refer to or require consultation. That such consultation is medically and medicolegally desirable, if not mandatory, of course, needs no elaboration. The physician is expected to be familiar with the language of the statute that obtains in his own jurisdiction, and he is legally obliged to observe it.

The courts are not in accord on the question of whether recovery may be had for injury resulting from negligence in the performance of abortion contrary to law. The weight of authority is that a woman cannot recover damages in such a situation, because her consent to the illegal act should and does constitute a bar to recovery. There are, however, cases holding to the contrary that have permitted recovery. The physician who contemplates the performance of an abortion for a therapeutic reason is well advised to obtain appropriate consent, to have consultation, and to maintain adequate records of the case.

535 N. Dearborn St. (10).

8. 1 Am. Jur., Abortions, s. 3.

ADVICE TO THE MEDICAL WITNESS

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In about 50% of litigated cases the testimony of expert witnesses is of importance and many times crucial, for the outcome of the case may be based on the testimony of experts, whether they be in the field of real estate values, engineering, or medicine. Most witnesses are what are called fact witnesses, that is, they may testify only to what they have actually seen or heard. These witnesses are not permitted to state conclusions or opinions, while the expert is called for that specific purpose and is allowed to state his conclusions and opinions. This discussion relates to the physician as an expert witness, a role for which he is, so far as I am aware, given no schooling and one that he learns only by experience in court. For physicians not familiar with courtroom and legal procedures I will mention a few basic factors.

THE COMPLAINT AND ANSWER

When one person wishes to sue another, his lawyer prepares and files with the county clerk a document called the complaint. This paper sets forth with varying particularity the claims and charges of the person who is called the plaintiff. This document is then served on the other party, who is called the defendant, and the defendant must prepare and file his answer within 10 days, unless this time is extended in an appropriate manner. This answer admits or denies the charges in the complaint, and the charges that are denied constitute the issues in the case. These denied facts are the only triable issues; this important point will be recalled later.

TRIAL, JUDGE, AND JURY

In due time the parties, their attorneys, and the witnesses are assigned a courtroom for trial. The trial may be with or without a jury; if it is without a jury the judge has a dual responsibility, namely, the determination of the facts as best they can be gleaned from the vagaries of human memory and the decision of the rule of law

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that applies, based on the decided facts. If the trial is by jury this responsibility is divided, and the jury becomes the sole judge of the facts. When the evidence has been given no one knows what facts the jury will determine to act on; therefore, before the jury retires to deliberate, the judge reads to the jury his instructions on the law. In this circumstance it is necessary to state various principles of law so that the jury will know which to use after they have decided the facts.

The majority of cases are tried before both judge and jury, but the ideas expressed in this discussion are applicable when testifying before a judge alone, or both judge and jury. When you walk into the courtroom you will see the judge sitting on the bench, the parties and attorneys before him at counsel table, and the 12 jurors seated in their alloted space. Remember, it is the jurors who find the facts. They are the ones you want to convince, and it is most unlikely that any juror will be an expert on the subject in the controversy. The chances are that most of the women jurors will be housewives and the men will be employees or owners of small businesses. The jurors are in an important position and will have been so impressed. They will not, by any means, be in the same frame of mind toward you as is the patient to whom you are accustomed. The patient comes to your office in distress, seeking your aid and advice and, generally, accepts your word with little or no question. The juror, on the other hand, is not seeking your aid, on the contrary, he is apt to feel, albeit unconsciously, that you seek to persuade him. He will be receptive but, nonetheless, eye you critically.

In addition, your word will be challenged on cross examination, which is the questioning period allowed the attorney for the other side. There will be objections made by the opponent's attorney, and the judge may refuse to allow you to answer questions on matters with which you are perfectly familiar. Thus, the psychological atmosphere in a courtroom is utterly different than that in your office or in the hospital. Many an inexperienced witness gets into trouble in court because an attorney has failed to condition him on this point in advance. The question is, then, how to impress the jury that yours is the correct viewpoint.

Your task as an expert witness is not a cold scientific one, nor are you speaking to scientifically trained analysts. Some things you might feel unimportant are actually of considerable moment. I have already mentioned the difference in atmosphere in a courtroom. Accept this difference graciously; let it not even be suspected that you are resentful of cross examination or the fact that you are not permitted to give answers to questions that appear to you to be perfectly proper.

GIVING TESTIMONY

To speak clearly, plainly, and understandably is of utmost importance. Words and sentences that are mumbled or phrases that die unborn when your voice drops at the end of a sentence cannot be heard by the jury, and if the jury cannot hear they will not even know you have said something that is favorable to your patient. Even worse, they might think you were trying to smother something you did not want them to hear.

To testify that you found evidence of a rheumatoid spondylitis ossificans and a congenital grade 2 spondylolisthesis is to tell a jury absolutely nothing; and you probably also will baffle your patient's lawyer and he will not know how to follow-up with additional pertinent questions. If you can explain your findings in words of one syllable, in plain English, you will have gained valuable ground with the jury. But a warning: do not be arrogant or speak down to the jury. Act as though you are sure there are many things they know far better than you, but on this subject, medicine, you just happen to be the one who is trained.

If you specialize in a particular field do not hesitate to confess that you are not expert in another field. If you do not read roentgenograms, say so and explain that that is the field of the radiologist. If you are not familiar with encephalography, say so and explain you have consultants for that type of work. Once a physician gets off into strange territory he may get lost and thus destroy the value of the evidence he gave while talking on a subject with which he was familiar.

Do not permit yourself to get hot under the collar; at least learn not to show it if you do. Many things may irritate a physician in court, not the least of which is cross examination by a sarcastic lawyer. Remember, the lawyer is also in full view of the jury, and if he uses undesirable tactics it will displease the jury unless, perchance, you follow his lead. Beware of repartee from the stand. A little wit is always welcome, but be sure it is no more than that. Between expert witness and cross examiner an interesting illusion exists. The expert is on the stand discussing a subject with which he is familiar by training and experience and the lawyer is not. You are in your own back yard, so to speak, and the lawyer is in foreign territory. Thus, it would seem, you have the advantage. On the other hand, the lawyer is familiar by training and experience with court procedure and courtroom psychology. If you are not careful, the counter exchange may appear as though you are unjustifiably giving the attorney a verbal clubbing because of your greater knowledge.

Also, it is well not to argue with a lawyer in court; and it is virtually imperative not to argue with the judge, as sometimes happens. The jury likes the judge, rarely is it otherwise, and they will resent it if you undertake to debate his rulings. The best rule of thumb suggestion I can give is that you remain silent and serene and let the lawyers do all the arguing and have all the fun of repartee.

I have just said be serene. Lawyers have a saying that an angry witness is a dead witness. The saying is, perhaps, self-explanatory, but we mean simply that a witness who loses his temper will lose his head and say something he does not mean and would not say in calmer and more deliberate moments. What he says while angry may well prove fatal to the side that has called him to the stand. If you feel your blood pressure going up, just sit back, relax, count to 10, then ask counsel to repeat the question, and start again. The content of your testimony is one phase of your appearance in court, the other phase is the credibility that the jury will attach to your evidence. In the legal world it is perfectly possible

that an accurate set of facts will be ignored because the person testifying to those facts was not accorded credibility by the jury.

LIMITATIONS OF TESTIMONY

Physicians often feel they are being choked off in court and are not being permitted to answer or fully state their opinions. The answer to this problem is not a short one. I have mentioned the complaint, the answer, and that the triable issues in court are only the issues made by the charges of the complaint that are denied in the defendant's answer. A trial in court is not a scientific investigation. It is traditionally an adversary proceeding based only on the issues fixed by the parties. Strange as it may seem, it is not the function of a court or jury to fix the issues and then uncover the actual facts but only to determine the issues in the pleadings based on evidence brought in by the parties. The court has no investigators, laboratories, or any means to develop evidence or assemble witnesses. Thus, the inquiry in court is highly restricted and limited in scope.

Scientists work for decades and even for centuries to find the correct answer to a problem. The fact that time passes is not accepted as an excuse for inadequately tested conclusions. Social, political, and legal problems, however, must be answered as they arise, because our social, political, and legal life is a dynamic one. We must keep moving and we cannot wait decades for the scientifically correct answer to a legal controversy. To do that would bring business to a crushing halt. If the law attempted to determine the truth by scientific methods, the famous trial of Ann Boleyn might well be still in progress. It can be seen, then, that the trial in court is limited to whatever issues the parties choose to make, and these issues are determined by the evidence the parties choose to present in court. It is rather evident that in court one can only seek to approximate the truth.

The expert on the witness stand is unfamiliar with the pleadings of a case or at least the legal significance of them. He is asked a question that seems to make sense; the other lawyer objects, and the witness cannot answer. The reason is that the parties did not put that phase in issue, and hence the evidence is immaterial to the issues before the court. This approach is, no doubt, repugnant to the scientific mind, but it is consistent with our great, although sometimes inefficient, way of life. There is another reason witnesses, physicians, are often not permitted to answer questions. Law is full of what may be called rules of exclusion, rules that reject evidence even though it is both material and true. The privilege that exists between physician and patient is an example of this. If a physician in his professional capacity learns that a married woman has contracted a social disease from someone other than her husband and the husband sues for divorce, this truth certainly would be material evidence. But if the wife refuses to waive the privilege, such evidence cannot be received, and the husband would lose his case unless he had other provable grounds for divorce.

Another example is the so-called Dead Man's Statute in California. It provides that when a person dies, someone asserting a claim against the deceased person's estate cannot give evidence of conversations with the deceased. If you have an oral contract with a man and he dies and you then assert a claim against his estate, you will not be allowed to tell of this conversation at trial no matter how true it may be. There are, then, instances in which the law expressly forbids telling the truth in court, but for good reason, based on desirability of consequences. In the latter case the law wishes to prevent fraudulent claims against the estate of a man who cannot defend himself because he is dead; in the former case the law considers the sanctity of confidence between patient and physician to be more important than allowing a man to divorce his wife. There are almost innumerable like instances, and I hope these examples will serve to explain why, at some time, you were not, or will not be, permitted to answer a forthright question asked in court.

Medical witnesses also complain at times that they have not been given an opportunity to explain certain answers given in court. An expert witness certainly is allowed to give explanations; he is not, however, allowed to make arguments from the witness stand. Just when an explanation ceases to be an explanation and becomes an argument is impossible to define, but that is the line of demarcation. When a lawyer feels the witness has gone beyond mere explanation and is arguing he will object. If the judge has the same feeling, he will sustain the objection, if not, he will overrule it. It is safe to say, however, that as long as your explanation stays short of an argument you will not be stopped by the court.

CONCLUSIONS

The physician is held in high esteem in the community in which he lives and works, and the purposes he serves in our American society are the highest. In court he can and should carry with him the quiet, refined dignity that his profession gives to him. He is not and should not suffer himself to be an advocate like the lawyer. He can carry with him into the courtroom the professional integrity, dignity, and intellectual firmness that make him a gentleman, which means, of itself, that he will be a good witness.

458 S. Spring St. (13).

Administration of Whole Blood.—Where there is whole blood deficiency with associated shock, prompt restitution is the most effective treatment. Resuscitation with plasma or plasma volume expanders has repeatedly been proved possible, but restoration is less effective immediately and ultimately, particularly where the blood loss is great. The principle established in World War II and reinforced in Korea of the administration of 1 bottle of blood for every 2 bottles of plasma or expander is sound and this ratio might be heightened to 1 to 1 in the more severe cases of shock. The need for rapid replacement in the patient shocked from blood loss is not sufficiently appreciated. Brisk administration of blood 1 unit in 5 or 10 minutes until a satisfactory clinical response is obtained, is indicated. If the venous channels do not permit sufficiently rapid transfusion to attain the desired result, intra-arterial routes may be employed. On rare occasions, the use of the radial artery by cannulation or the femoral artery by percutaneous puncture is indicated. Direct puncture of the aorta, when there is massive loss of blood during the course of abdominal or thoracic procedures, may be the only means by which blood can be replaced rapidly enough.—H. R. Robertson, M.D., and A. D. McKenzie, M.D., Plasma, Plasma Expanders, Blood Transfusions and Blood Fractions, *Surgical Clinics of North America*, October, 1954.

LEGAL ASPECTS OF A MEDICAL PARTNERSHIP

George E. Hall, J.D., Chicago

A partnership is one of the closest forms of personal and legal association that exists. Essentially it is an agreement between two or more competent persons to place their money, effects, labor, and skill, or some or all of these, in lawful commerce or business and to divide the profit and bear the loss in certain proportions. It is in reality a contract of mutual agency with each partner acting as a principal in his own behalf and also as an agent of his co-workers. The partnership relation is important to physicians because the corporate practice of medicine, being unethical and in most states illegal as well, is unavailable to them. A physician, of course, may practice by himself or as the employer or employee of another physician. If he does not want to follow such orthodox arrangements, however, it is to the partnership rather than to the corporation that he must turn.

ADVANTAGES AND DISADVANTAGES

What are the advantages and disadvantages of partnerships. Probably the greatest disadvantage is the liability that each partner has for the negligent and tortious acts of each other partner. Since partners are the agents of each other, the malpractice of one partner becomes the liability of the other partners; and a malpractice judgment against one partner is enforceable against the others. A similar disadvantage is the personal liability of each partner for any debts contracted in the name of the partnership. This obligation does not extend to the privately incurred debts of partners, but it does cover any debt incurred by any partner within the scope of the partnership's business. In addition, there is the strong obligation that a partner must feel to provide financial care in the event of the illness, incapacity, or death of a partner. This may prove an onerous burden at times. Finally, there is the disadvantage of having one's practice so vitally dependent on the smooth interplay of different personalities. Partners must understand each other and be able to work together. This personal equation has been well expressed by a former president of the Illinois State Bar Association in this way: "Becoming a . . . partner is the next thing to getting married. One has to live with partners and associates many hours a day. He will have to listen to the same stale jokes, and watch the partner repeat the same mistakes probably at his expense. He will expect the others to overlook his mistakes. He must be prepared to ignore petty things, and not spend valuable time watching the other fellow. He should know all about the partner and like him just the same." [1]

These disadvantages sound rather formidable, but there are many partnerships of long standing throughout the country. What are some of the advantages of a partnership that have kept these groups alive? In the first place, the presence of a group of men practicing as mutual agents under one roof affords each a chance to practice that part of medicine that he likes best and affords an ample and ready opportunity for the pooling of professional knowledge and skills. In addition to the pooling of professional skills a partnership offers an opportunity for the pooling of financial resources. Many of the diagnostic and treatment aids required by today's physician, to say nothing of the many books and periodicals that he would like to have readily available, require a greater financial sacrifice than most individual physicians, especially in the early years of their practice, are capable of making. Two, three, or four physicians planning and working together, however, can obtain these necessary "working tools" without tying up money needed to buy homes or to raise children. Two other partnership advantages dovetail; they are an opportunity to enjoy more leisure for study or relaxation and an opportunity to offer patients a stable and permanent source of medical care. When the sole practitioner attends an American Medical Association meeting, for example, his office is not functioning to capacity. Arrangements have been made to care for current patients, of course, but no new business or emergency business can be handled. When one partner is gone, however, the remaining partner or partners keep the office functioning. Current patients know that their needs will be taken care of, new patients find the office open and facilities available for needed medical service. Even the death of a partner does not leave patients "up in the air" and force them to look around for a new physician; they can continue to go to the same office. Patients appreciate this feeling of stability and permanence.

Economic and tax advantages may also accrue to partners. A partnership as such does not pay an income tax, so no double taxation results, but a partnership is required to file an information return. This will set forth the partnership gross income, the deduction of the usual and necessary business expenses, and the net share distributed to each partner. While most of the expenses could just as well be deducted by the individual, there may be practical benefit in the partnership claiming a deduction for such expenditures as club dues, traveling expenses, and car expenses. Revenue agents may be less critical of such deductions if they know that the expense has already been screened by all of the partners; they know the partners will not reduce their personal income just so one of the group can pay off some of his personal living expenses. Finally, from the viewpoint of the physician's own financial security, a partner's income tends to be more stable. In addition, he knows that in the event of illness, incapacity, or even death arrangements have already been made to guarantee him a continuing income and to guarantee his widow and children a fair share of the practice that he has helped to build. It has been expressed many times that, although partnership incomes tend to be a little less than those of sole practitioners, the

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1. Hinshaw, J. H.: Practice in Groups, Illinois Bar J. **40**: 5, 1951.

conclusion seems warranted that the reasonably assured advantages of a partnership substantially outweigh its potential disadvantages.[2]

LEGAL PROBLEMS

Basically, of course, the legal aspects of a medical partnership are the same as the legal aspects of any other partnership. These include problems arising out of the law of contracts: leaseholds, purchase of equipment and supplies, insurance of various types, employee relations, holding companies, the partnership contract itself; problems arising out of the law of torts: malpractice or negligence of partners or employees, injuries from use or misuse of the premises or equipment, rights of privacy or confidential communications; problems arising out of tax law: the partnership return, the partnership fiscal year, the proper accounting methods to be used in reporting income and expenses when a partner dies or is incapacitated for any length of time; and many others. Additional legal problems that are peculiar to medical partnerships may also arise because medical partnerships deal with the sale of personal services rather than the sale of a commodity; because of the intensely personal and private character of the physician-patient relationship, a relationship that does not exist between the buyer and seller of automobiles, shoes, or women's hats; or because the medical profession is governed by certain principles of ethics that many times place limitations on a physician's conduct that the law does not impose. For example, some advertising costs that the law may allow one to write off as a usual and necessary business expense are at least inferentially proscribed by the Principles of Medical Ethics.

It is impossible to consider all of the legal aspects of a medical partnership within the scope of a single discussion. In reviewing the correspondence of the Law Department of the American Medical Association, four aspects appear more troublesome than the others. They are: contents of the partnership contract, agreements in restraint of practice, distribution of partnership profits, and problems of termination.

The Partnership Contract.—A partnership relation may conceivably arise by implication. Usually, however, it is the result of a specific contract between the partners, and probably the commonest inquiry received by the Department relates to the contents of the partnership contract coupled with a request for a sample or model contract that the inquirer may copy. Conceding the need for harmonious personnel relationships if a partnership is to be successful, one of the most important factors in attaining such relationships is a clearly stated and thoroughly understood working agreement between the partners. Such agreement may conceivably be wholly oral, but this is not recommended because of the difficulty of proof and the ease of misunderstanding. What then should a written partnership contract contain?

Introduction: The introductory paragraph should contain the names and addresses of the parties, the place of practice, and a statement that the parties thereby intend to, and do, form a partnership according to the other provisions of the contract.

Description: The paragraph on description should state the purpose of the partnership, such as general practice, surgery, or ophthalmology; its expected duration—one year, 5 years, 10 years, or unlimited—and whether or not it is a continuation of some established practice or partnership.

Obligations of Partners: The paragraph on obligations of partners could set forth the general obligation to devote all professional time, effort, and ability to the development of the partnership business, together with any desired specific obligations or restrictions, such as: (1) duty to carry malpractice insurance and insurance on any automobile used for partnership business, (2) duty to make all billings and collections through the partnership; (3) duty in regard to night calls and emergency cases; and (4) duty in regard to the operation of a hospital or pharmacy, if that is intended.

Gross Income and Approved Partnership Expenses: The paragraph on gross income and approved partnership expenses could include a listing of those expenses that must be paid out of gross income, such as rent; heat; telephone; electricity; stationery and office supplies; salaries of clerical and professional assistants; maintenance of professional and office equipment; drugs, medicines, and other items that a physician must keep on hand; necessary additions to the library; any insurance premiums that the partnership is going to pay; dues to professional societies; expense of approved postgraduate courses for partners or employees; taxes; automobile maintenance and depreciation; retirement fund; loan fund; and research fund. The amount remaining after payment of these expenses would represent partnership net income.

Control of Finances: The paragraph on control of finances should outline adequate accounting methods, state the name of the bank in which partnership funds are to be deposited, specify the name of the persons who may draw checks against those funds, and authorize partners to inspect the books of the partnership at any time. This paragraph could also make provision for the employment of a business manager and outline the scope of his responsibilities. It should fix the limits beyond which partners may not, without special permission, obligate the partnership financially and should specify a partner's limits in such areas as borrowing money, assigning property, and compromising accounts receivable. It should limit the partner's rights to contract his own or the partnership's services, if that is desirable. It should establish the fiscal year of the partnership.

Control of Administrative Policy: In the case of a two or three man partnership it is probably satisfactory for matters of policy to be determined simply by the partners talking things over. Sometimes, however, it is advisable to designate one of the members as "managing partner." This becomes almost essential as the size of the partnership increases, and sooner or later it is necessary to break down responsibility into committees. These may include some or all of the following: executive committee; purchasing committee; finance committee; house committee; program committee; laboratory committee; library committee; hospital committee; committee to administer prepayment plan, if any; and grievance committee. Whenever a committee is established provisions

2. Medical Partnerships, Wisconsin M. J. 53: 27, 1954.

should be made for determining its size and for determining the qualifications of members, their method of selection, term of office, and duties and responsibilities.

Capital Interest: The contract should carefully state the initial capital investment of each partner and whether or not it has been paid in full; if it has not, the contract should provide the method by which such additional payments are to be made. It should also provide the extent to which future partners should contribute to the capital account and the method of making such contributions.

Holding Company: There have been instances in which it has been advantageous for the individual partners or the partnership to acquire real estate and build office facilities. Tax and other savings are sometimes effected if a separate corporation is organized for the purpose of owning and operating this building. Ownership of stock in this corporation could be limited to the physician-partners, and the corporation could rent its facilities to the partnership and also furnish certain clerical and technical services. The corporation itself would not practice medicine, of course; that would be handled by the physician tenants. The details of operation of this holding company would probably be better spelled out in a separate agreement, but the partnership contract should contain some reference to this other agreement.

Insurance: Many problems arise in connection with the type and purchase of insurance to meet the needs of the practice. This is especially true if life insurance is being used as a means of funding a retirement program or a method of taking care of the interests of deceased partners.[3] Sometimes the insurance problems are also handled by separate agreements, and here again the partnership agreement should contain reference to the separate agreement.

Other Considerations: The contract should also contain paragraphs relating to restrictive covenants, if desired; the distribution of net income; and the rights of withdrawn or deceased partners. These will be discussed separately later. Finally, there may be questions concerned with such matters as vacations and other time off, disposal of records when a partner withdraws or dies, staff meetings, and arbitration committees.

The foregoing is not a complete list of all items that have been included in partnership contracts. It is hoped, however, that it is of sufficient length and scope to illustrate why a sample contract would be impractical and to indicate the variety of problems that physicians contemplating a partnership must solve. They are not insurmountable, however.

Agreements in Restraint of Practice.—Second only to an interest in the partnership contract as such is an interest in the problem of restrictive covenants or contracts in restraint of professional practice. In almost every medical partnership contract that comes to the attention of the Law Department there may be found a provision that, if a partner withdraws from the partnership or if the partnership is terminated, at least one of the partners will not practice in the same locality or within a prescribed radius of the former office for a specified number of years. These are contracts in restraint of professional practice; they deny a physician the free choice of location in which to practice his profession. Are they unenforceable as being contrary to public policy? In practically every case in which the question has arisen the courts of this country have held that such agreements are binding on the parties and are legally enforceable. Public policy is as interested in enforcing proper contracts as it is in invalidating improper and oppressive ones. The determining factor in instances of this kind is the reasonableness of the terms, and these terms must be reasonable as to both time and area. If the terms are exceedingly harsh a court may refuse to enforce the agreement altogether. Sometimes, however, the court will enforce the agreement but only to the extent that in its opinion is necessary to protect the interests of the contracting parties.[4] Such contracts have been enforced when the time is unlimited [5] but not when the area is unlimited. A contract providing for both unlimited time and unlimited area would undoubtedly be held to be unreasonable.

Distribution of Profits.—The third common problem presented to the Department relates to the division of partnership profits. No hard and fast rules of guidance may be outlined. The only accurate statement that can be made is that partners do divide their profits between themselves in some manner. An examination of sample contracts sent to the Law Department reveals that the distribution methods use percentage divisions, salaries, drawing accounts, or combinations of these. Actually, the methods used to divide income are probably almost as numerous as the number of partnerships themselves, and, from a purely legal point of view, any method of distribution that is mutually agreed on by the partners and clearly set forth in the partnership contract will probably be upheld in court in a suit for an accounting. It cannot be too strongly emphasized, however, that legal acceptability in no sense carries with it ethical approval. The Principles of Medical Ethics, as is well known, proscribe fee splitting. The Judicial Council of the A. M. A. even expresses disfavor of practices that may be all right in themselves but that open the door to fee splitting. It has many times held that physicians who collaborate in the care of a patient should render their separate bills for the services that they individually perform and that the receipt of money for medical services that are performed by another physician is improper. Would not this interpretation of the principles, therefore, render unethical any division of partnership profits not based solely upon the actual earnings directly allocatable to each individual partner? Although the Judicial Council has issued no formal opinion that partners who divide partnership income on a straight percentage basis are guilty of fee splitting, physicians should bear in mind that such a possibility definitely exists. They should know that, while the sky may be the limit legally, the ceiling may be considerably lower ethically.

Problems of Termination.—Finally, the Department receives inquiries relating to methods used to compensate partners who become in any degree incapacitated and unable to carry on their practice and methods used to compensate the widow or estate of a deceased partner.

3. Davis C. D.: Liquidation Agreements for Personal Service Partnerships, Diamond Life Bulletins, M17-M22.

4. *Foltz* v. *Struxness*, 215 P. (2d) 133 (Kan.); *Herrington* v. *Hackler*, 74 P. (2d) 388 (Okla.).

5. *Doty* v. *Martin*, 32 Mich. 462; *Foster* v. *White*, 248 N.Y. App. Div. 451 (N. Y.).

These matters should be clearly stated in the partnership contract, because at the time of its preparation no partner is either incapacitated or dead, and the emotional conflicts characteristic of either situation are absent. The problem of incapacity is relatively simple. Some contracts allow ill or injured partners full income for six months, half income for six months, one-fourth income for six months, then termination of the agreement. Others provide different percentages and different time periods. All must consider the eventual possibility of termination of service, and that is where most of the problems arise, whether the termination is for reason of incapacity, overage, death, or simply withdrawal. It is not hard to evaluate capital interest and uncollected accounts, but the job of evaluating good will can be troublesome. Obviously the equities of the partner who dies, becomes incapacitated, or retires differ from those of the partner who just decides to leave or is asked to leave by the other partners. Prospective partners must be alert to the fact that such differences do exist, so that they and the attorney drafting their partnership agreement can make provision for them. The tax and insurance problems of a settlement arrangement with the heirs of a deceased partner may be complicated and therefore require thoughtful discussion and complete understanding, especially since, again, ethical considerations arise. The Judicial Council has held it to be improper for a partner's widow to receive a share of partnership income for a fixed number of years after death.

SUMMARY AND CONCLUSION

Problems concerned with the legal aspects of a medical partnership chiefly are those of the contents of the partnership contract, agreements in restraint of practice, distribution of partnership profits, and termination. The main conclusion that should be reached is that, while a partnership is a useful and important legal relationship, its success depends to a great extent on the contract creating it. The preparation of such a contract is not child's play but should be entrusted to one experienced in such matters. These matters are not taught in medical schools; therefore, physicians should not try to prepare such contracts by themselves; they should retain an attorney for that purpose. Physicians contemplating drafting their own partnership contracts might well bear in mind the old adage to the effect that only fools and jewelers tinker with watches.

535 N. Dearborn St. (10).

MALPRACTICE, AN OCCUPATIONAL HAZARD

Louis J. Regan, LL.B., M.D., Los Angeles

The likelihood of being sued for malpractice is now so great that the practicing physician must recognize that it constitutes a definite occupational hazard. The incidence of malpractice claims increased tenfold during one decade, the 1930's, and the situation continues to grow worse. So frequent are these claims today that, in some localities, any patient with a less than perfect end-result is a potential malpractice claimant. If physicians were always able to obtain perfect results there would, of course, be no malpractice actions. But deaths, untoward and unexpected results, continuing disabilities, and complications occur and will continue to occur. There is always a chance that without negligence on the part of anybody some unfortunate result, sometimes fatal, will happen.

The physician enjoys unique privileges and opportunities; on the other hand, he is burdened with special responsibilities and obligations. It is in his personal concern for his patient that the physician differs from the tradesman or the pure scientist. There is no relationship outside of the family that is so personal and intimate as that of the physician and patient, no relationship in which the character, integrity, and conscience of one party are so important to the well-being of the other. The secret of the success of the physician's care of his patient lies in his concern for the patient; it rests on his appreciation and total acceptance of his responsibilities.

BACKGROUND

As a psychological phenomenon it may be observed that patients expect physicians to be dedicated, gentle and kind, always available, possessing endless charity, inexhaustibly patient, and everlastingly resourceful; and yet they cannot believe such an idealization. How then can they help but distrust their own conception? A person with such an idealized character is in fact fantastic, lacking the unpleasing motivations that commonly tempt the patients themselves to unkindness and immorality. Inevitably, the patient's own inherent weaknesses force suspicion of this idealized physician, and the patient's own agressive instinct, unless well disciplined and socialized, tends to cause him to act to bring down to his own level this ideal healer.

The law requires that a physician who undertakes to treat a patient must possess and exercise the degree of skill and care commonly possessed and exercised by other reputable physicians in the locality. If the physician holds himself out as a specialist he must meet the standards of the specialist in his chosen field. His legal duty is not affected by the fact that the professional services are rendered gratuitously. No physician may justly be charged with malpractice unless in the service rendered to his patient he fails to meet the requirements of good medical practice or unless in the diagnosis or treatment of his patient he fails to do something he should do or does something he should not do, measured against accepted standards of practice. The standard of practice is always to be determined by what other reputable practitioners in the community, or in similar communities, would or would not do in the care of similar cases. Any

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Read in the Session on Legal Medicine before the Section on Miscellaneous Topics at the 103rd Annual Meeting of the American Medical Association, San Francisco, June 24, 1954.

patient may sue any physician who has cared for him professionally; and no physician is immune. It is to be noted, too, that the majority of these actions involve practitioners who are above the median of their respective groups in experience, standing, and reputation. Further, the issue in these cases is usually in doubt, because it is ordinarily to be determined by 12 laymen who cannot really understand the medical facts presented to them. Even an Indian medicine man has had an adverse malpractice verdict.

There has been a great expansion of medical knowledge in the past quarter century; new and potent agents have been made available, and highly specialized techniques in diagnosis and in surgical treatment have been developed. Current methods tend to emphasize the scientific aspects of medicine and the importance of objectivity in their application. Today the time of the student in medical school is necessarily given to the study of the science of medicine; too little time is available for consideration of what has been called the art of medicine or of its practice.

One may well ask why it is that, despite the progress made, medical prestige is lower today than it was 25 years ago, why it is that there has been a decrease in the confidence in which the profession was formerly held, why it is that patients now so readily tend to express mistrust of their medical attendants to the point, frequently, of total collapse of confidence when an unhappy result occurs. There is no simple answer to these questions; nevertheless, there can be no doubt but that the ill-will and misunderstanding engendered by the great number of malpractice cases has been an important contributing factor. This is particularly unfortunate in that a majority of all the current malpractice actions are not well founded, and because the danger of being sued is so great and so constant, the wise physician must now, even while caring for his patient, give thought to safeguarding himself, because an unjust malpractice action may result from the case.

It cannot be too strongly emphasized that, in the patient's own interest, the patient must be able to have confidence in his physician and that the physician is entitled to have patients in whom he may safely have confidence. Mistrust is not, or at least cannot long remain, unilateral. If a physician must be constantly apprehensive of legal suits, shortly and inevitably his own aggressive instinct will, in some measure, overcome his professional and humanitarian motivations. In such circumstances, in the final analysis, it is the patient who must be the loser.

"SECONDARY CAUSES"

Even a constant high degree of skill and care will not invariably ward off an unjust malpractice accusation. Not only is it necessary to practice good medicine, but the physician must be able to show proof of what he has done. He must know and take advantage of every possible self-protecting measure. An analysis of any series of malpractice cases discloses the existence of what may be called "secondary causes." These are, in many instances, the immediate and precipitating causes of suits, without which many of the suits would not have been brought. Among these "secondary causes" the following are the most frequent: (1) cases in which patients are urged to sue by relatives or friends who are physicians, lawyers, or nurses; (2) cases in which physicians have sued to collect their bills from dissatisfied patients or have used irritating pressure methods in collection efforts; (3) cases in which patients were surprised and shocked by the amount of the fees charged; (4) cases in which patients resented having been kept waiting in the office or conceived that they had in some other way been affronted; and (5) most frequently, cases in which there had been criticism by some physician of the treating physician's care of a patient or of the result obtained.

PHYSICIAN-PATIENT RELATIONSHIP

It can be observed in a great many of the cases studied that, somewhere between the beginning of the treatment and the filing of the suit, the physician lost the good will of his patient. One cannot refrain from emphasizing that the average patient will not happily tolerate, in fact he will not endure, haughty, supercilious treatment, overcharges, or suits for fees in cases when results are unsatisfactory, without seeking compensation to soothe his sensibilities and damages for injuries allegedly sustained. On the other hand, patients who have a friendly feeling for the physician and who believe that everything possible has been done for them are not likely to sue for malpractice, even in bad-result cases. It is essential then to establish and to maintain a warm relationship with every patient. The patient should be brought to recognize and to appreciate the physician's sincere and intelligent interest in his welfare. The relationship should be founded on fair-dealing, diligent attentiveness, and reasonable and honest disclosure, so that the patient feels a secure and justifiable confidence in the physician. The patient should be made to understand that the physician's interest is in him as a person, a whole entity. This essential over-all consideration should go beyond the study and treatment of a particular organ, system, or disease. It has been said that the physician is not a moralist. He must, nevertheless, possess high moral integrity. He has the opportunity, if not the obligation, to direct a person under his professional care toward a useful and wholesome life; if this obligation is exercised, the effect may frequently be of distinct therapeutic value.

It hardly seems necessary to point out that this fundamental physician-patient relationship cannot exist unless there is complete freedom of choice of physician and of patient. Certainly the climate is unwholesome if the relation is subject to the interest or control of any third party. In conclusion, it is submitted that the ideally cared for patient is unlikely to sue for alleged malpractice and that the ideal physician has largely neutralized his occupational hazard.

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Physicians as Citizens.—Physicians, as good citizens, possessed of special training, should advise concerning the health of the community wherein they dwell. They should bear their part in enforcing the laws of the community and in sustaining the institutions that advance the interests of humanity. They should cooperate especially with the proper authorities in the administration of sanitary laws and regulations.—*Principles of Medical Ethics of the American Medical Association,* chapter 8, section 1, June, 1954.

NEWER CONCEPTS IN THE DIAGNOSIS AND TREATMENT OF RHEUMATIC FEVER

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In order to recognize rheumatic fever and to give proper treatment to a patient, it is of value first of all to understand modern concepts regarding the etiology of this disease and more specifically the epidemiology of streptococcic disease. Nearly all authorities are now convinced of the importance of streptococcic disease in initiating the onset of rheumatic fever; however, the exact mode of production of rheumatic fever by the streptococcic organism or its by-products is not clearly understood. Factors in addition to streptococcic disease would also appear to be of importance in the development of rheumatic fever. Here likewise the relationship is not entirely clear. All of the factors, listed in the order of their apparent importance, are streptococcic infection, hereditary predisposition, environment (stress), endocrine status (adrenal), and dietary intake and nutritional status.

DIAGNOSIS

Rheumatic fever occurs at all ages but has its peak incidence at 9 years of age and is rare under 5 years of age. From careful surveys in both the military and civilian populations, it would appear that approximately 2 to 3% of most streptococcic infections give rise to rheumatic fever. These numbers may be made even larger if the criteria used to diagnose rheumatic fever are extended to include minimal changes on the electrocardiogram plus an elevated sedimentation rate. Such laboratory changes are now recognized as common sequels to uncomplicated streptococcic disease and probably do not represent actual effects of the rheumatic process as we now understand it. In not all patients, however, can one obtain a history of a preceding respiratory infection, perhaps because some streptococcic infections are so mild or chronic that they attract little attention.

A well-defined case of rheumatic fever can be easily recognized by the polyarticular and migratory nature of the joint involvement plus manifestations of cardiac involvement, such as electrocardiographic changes and auscultatory evidence of valvular disease, congestive heart failure, or pericarditis. Less common evidences for rheumatic fever, but contributing strongly to the diagnosis when present, are subcutaneous nodules, erythema marginatum, and chorea. Difficulty in establishing the diagnosis usually arises in the milder forms of the disease. In such instances the polyarthritis is frequently mild and transitory, mitral heart murmurs may be heard but are unaccompanied by enlargement of the heart and changes on the electrocardiogram, other localizing signs may be absent, and changes in the laboratory tests such as the sedimentation rate and hemoglobin level may be minimal. In such cases also, substances present in the serum referred to as "acute phase proteins or reactants" may be tested for and may aid considerably in the diagnosis. There are a number of these reactants, some of which can easily be tested for in the routine laboratory examination; they are designated acute phase reactants because they become increased in amount during the acute phase of a number of diseases. (See table.)

Except for the antistreptolysin-O titer, the acute phase reactants are nonspecific, as they become elevated in conditions other than streptococcic disease and rheumatic fever. On the other hand, an increasing antistreptolysin-O titer would indicate recent exposure to streptococcic disease, and persistent elevation of this titer in spite of adequate antibiotic therapy would be strong evidence for the existence of rheumatic fever. The acute phase reactants are of particular value in the questionable case of rheumatic fever. Negative or normal values for these reactants would be strongly against the diagnosis. It should be emphasized at this point that, in those patients with only mild symptoms and in those with possible systemic inflammatory disease such as periarteritis nodosa, lupus erythematosus, and dermatomyositis, frequently the correct diagnosis can be made only after prolonged observation and with careful evaluation of special laboratory tests.

Acute Phase Reactants in Serum of Normal Children and of Children with Rheumatic States

Reactants	In Normal Children	Acute Rheumatic Fever	Inactive Rheumatic Fever	Sydenham's Chorea
Antistreptolysin-O *	165	398	250	...
Mucoprotein tyrosine, mg./100 cc.	2.5	8.5	2.9	3.8
C-reactive protein †	0	+	0	+, 0
Hyaluronidase inhibitor	21%	42%	16%	17%
Complement ‡	37	59	37	...
Nonglucosamine, mg./100 cc.	114	190	130	164
Hexosamine, mg./100 cc.	54	100	61	69

* Todd units.
† Precipitation.
‡ 50% hemolytic units per milliliter.

TREATMENT

Once one has established the diagnosis of rheumatic fever, treatment should be directed along the following lines: eradication of any existing streptococcic infection in the body, particularly in the nasopharynx; prevention of future invasion of the body by streptococci; creation of optimal facilities for rest; suppression of fever, arthritis, and carditis; provision of a well-balanced diet including proteins and vitamins; and gradual resumption of activity after all signs of active disease have disappeared. Streptococci can best be eradicated by parenteral administration of 300,000 units of procaine penicillin daily for seven days, or by oral administration of 200,000 units of penicillin five times a day for seven days. Once the streptococci have been eliminated, reinfection can be

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prevented by oral administration of 200,000 units of penicillin twice a day. If a child can rest in a room by himself and proper attention can be given to his needs, he may be kept at home if he is not too acutely ill. In many instances, however, such conditions cannot be met, and it is best for both the child and the parents that some type of hospital or convalescent care be considered. As far as the patient is concerned, there would appear

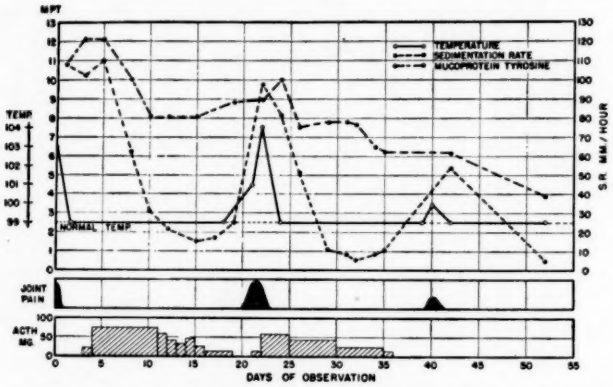

Fig. 1.—Effect of corticotropin (ACTH) on temperature, sedimentation rate, mucoprotein tyrosine values, and joint pain in an 8-year-old boy with rheumatic fever.

to be a real advantage in suppressing the manifestations of rheumatic fever, namely, fever, arthritis, and carditis. It is now well known that salicylates, cortisone, corticotropin, and certain phenolic compounds can suppress these manifestations; however, none of these compounds or substances appears to shorten the duration of the disease.

Data illustrating these two last points can be seen in figures 1 and 2. Figure 1 shows the marked effect of corticotropin on the fever, arthritis, and sedimentation rate in an 8-year-old boy as long as it was given and a recrudescence of symptoms and signs when it was stopped pre-

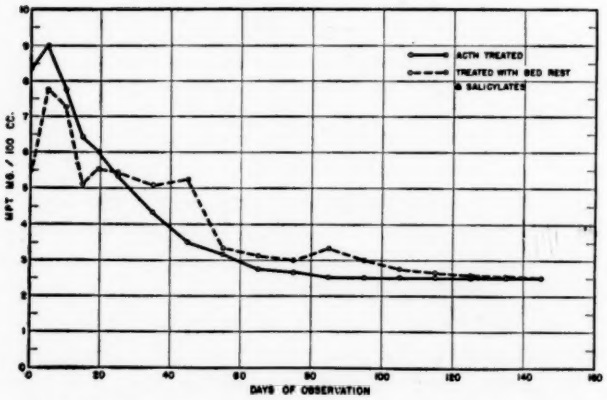

Fig. 2.—Mucoprotein tyrosine values in two groups of patients with rheumatic fever treated with corticotropin (ACTH) and with bed rest and salicylates.

maturely. In general I have found that the sedimentation rate returns to normal within 10 to 15 days if large enough amounts of corticotropin and cortisone are used. As illustrated in figure 2, on the average it takes the serum mucoprotein tyrosine approximately 90 days to return to normal. This to me would appear to be the minimal length of time a patient with rheumatic fever should be kept in bed; many patients require much longer periods of time. In those cases in which therapy with corticotropin or cortisone was discontinued before the serum mucoprotein tyrosine had dropped below 5 mg. per 100 cc., recrudescence of symptoms, or the so-called rebound effect, frequently occurred. A major question concerns the unanswered problem of altering the outcome of the disease in terms of residual heart damage by suppressing inflammation. The answer to this question may soon be available to us as the result of a cooperative project currently being sponsored by the American Heart Association and several institutions. In the meantime we are on the horns of a dilemma as to whether or not to administer corticotropin or cortisone to patients with rheumatic fever. I personally have made a compromise in this question and currently administer the hormones to those moderately to severely ill with the disease.

PREVENTION

Finally it must be mentioned that, once the disease has become inactive, recurrent attacks of rheumatic fever may be prevented by preventing streptococcic infections. This can best be accomplished by the administration of 0.5 to 1 gm. of sulfadiazine daily throughout the year or by oral administration of 200,000 units of penicillin twice a day on an empty stomach. Sulfadiazine prophylaxis is cheaper than treatment with penicillin but necessitates closer medical supervision because of the slightly greater incidence of side-reactions. Prophylaxis should probably be continued for five years after the last attack or until adolescence, whichever occurs first.

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Diabetes Mellitus and Pregnancy.—Diabetes mellitus in pregnancy is becoming more frequent. Due to the advent of insulin, many childhood diabetics live to bear children. All clinics show an increase in the number of these patients. It is generally agreed that proper care of the diabetes is the primary and important concern. Such patients should be under the constant supervision of an expert in diabetic control. The diabetes often gets out of control during the last trimester of pregnancy. Pre-eclamptic toxemia may develop in 15 to 25% of these patients. Due to the overactivity of the adrenal gland during pregnancy, much more sugar is produced, and this calls for an extra production of insulin by the pancreas. The diseased pancreas of the diabetic is often unable to respond to this increased load. Insulin may have to be increased during the last part of pregnancy. . . . In some cases even this is unsuccessful. The addition of large amounts of estrogen, or estrogen and progesterone, in the treatment of these patients still has to prove its efficacy. The results reported by groups using these hormones show a marked improvement over previous statistics, but clinics which rely on insulin are reporting equal improvement. . . . The time and method of delivery of the pregnant diabetic vary with the individual case. A patient with mild diabetes who is well controlled throughout pregnancy, who does not develop toxemia or other complications, can be allowed to go to term and deliver in a normal manner. The patient with severe diabetes is the one who most generally gets out of control, and who most often develops pre-eclamptic toxemia. In such cases, the time of delivery depends upon the size and maturity of the baby and the general condition of the patient. Usually from the thirty-fourth to the thirty-sixth week of pregnancy is the most favorable moment. As this type of case is usually unfavorable for the induction of labor, cesarean section is the procedure of choice. —B. Tenney, M.D., Advances in Obstetrics and Gynaecology, *The Practitioner*, October, 1954.

THIOPENTAL SODIUM ANESTHESIA IN INFANTS AND CHILDREN

Carl E. Wasmuth, M.D.
and
Donald E. Hale, M.D., Cleveland

Thiopental (Pentothal) sodium has long been considered an acceptable anesthetic agent in adults. Its use in infants and children, however, has been largely limited to its rectal administration as a basal anesthesia. The intravenous administration to be described provides a safe anesthesia for patients in this young age group.[1] Since the limits of physiological balance in infants and children are narrow, only small deviations from the normal can be tolerated for any length of time.[2] Maintenance of a patent airway with sufficient aeration of the lungs must be guaranteed. Not only must adequate quantities of oxygen be delivered to the alveoli, but sufficient dilution of the alveolar contents is required to eliminate the carbon dioxide build-up. Therefore, in the infant and frequently in the older child, endotracheal intubation is advisable. Assisted respiration in excess of the normal tidal air assures adequate gaseous exchange.

Intravenous thiopental anesthesia has certain definite advantages, but it does not entirely replace inhalation anesthesia. When electrocoagulation or electrocautery is required for the surgical procedure, thus contraindicating explosive inhalation anesthetic agents, thiopental is a safe substitute. During thiopental anesthesia the patient's respiratory excursions are quiet. When a local anesthetic agent is used, it is possible to carry the patient in a light plane of hypnosis.[3] These advantages combine to expedite the surgical procedure. Safe supplementary doses are easily calculated from the administration of small trial amounts of dilute thiopental solution. The use of a long, unkinkable endotracheal tube eliminates metal connectors that may encroach upon the surgical field (fig. 1). When the airway is secured, the anesthetist may be remotely placed from the patient, a particular advantage during surgery of the head and neck.

METHOD

Preoperative Medication.—As recommended by Leigh,[4] morphine and atropine are administered according to the patient's age and weight. In the excitable patient, supplementary agents such as pentobarbital sodium and thiopental rectally may be used for sedation to avoid the psychic trauma of ether induction.

Anesthesia Technique.—Endotracheal intubation is advised for children less than 5 years of age and in all patients who are to undergo surgery of the head and neck. The patient is carried into the first plane of surgical anesthesia by open-drop ether; an orotracheal tube is then introduced so that its tip extends 2 cm. beyond the larynx. In the newborn infant, the end of the catheter must lie midway between the larynx and carina. To insure this position, the endotracheal tube is marked at a point 1 in. from the tip of the tube and inserted through the larynx until this mark reaches the vocal cords. The caliber of the endotracheal tube is selected after direct laryngoscopic examination. The catheter should fit snugly in the laryngeal introitus; if the tube is too small, the anesthetist is deprived of adequate control of the respirations and the use of positive pressure breathing; if it is too large, it produces postoperative laryngeal edema. When the catheter is securely anchored (fig. 2), accidental extubation is difficult and endobronchial intubation unlikely. In older patients the increased length of the trachea [3] provides a greater margin of safety.

Concurrently, a venesection is performed on the saphenous vein at the anterior aspect of the internal malleolus (fig. 3). Through a transverse incision, the vein is isolated from the surrounding structures and a short length of polyethylene tubing is inserted into its lumen through a three-cornered incision. The free end of the plastic tubing is then adapted to the stopcock manifold, to which a 250 cc. bottle of 5% glucose in water is connected. This venoclysis is allowed to drip at a rate of 20 drops per minute. Thiopental and the other agents

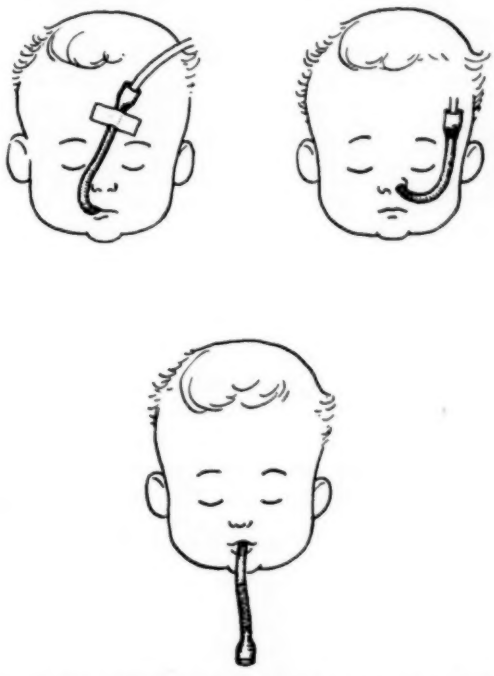

Fig. 1.—A long, unkinkable endotracheal tube will lie flat on the face and can be bent in any direction out of the surgical field. Various sizes of large adaptors connect this tube to the anesthesia equipment of choice.

From the Department of Anesthesiology, the Cleveland Clinic Foundation, and the Frank E. Bunts Educational Institute.

Read before the Section on Anesthesiology at the 103rd Annual Meeting of the American Medical Association, San Francisco, June 23, 1954.

1. Webster, C. F., and Van Bergen, F. H.: Pentothal-Curare Mixture with Endotracheal Nitrous Oxide and Oxygen in Infants, Bull. Univ. Minn. Hosp. **20**: 525-533, 1949. Holly, J. D.: Intravenous Anesthesia in Children, South. M. J. **37**: 631-637 (Nov.) 1944.

2. Stephen, C. R.: Physiological Factors of Significance in Paediatric Anaesthesia, Canad. M. A. J. **63**: 109-112 (Aug.) 1950.

3. Wasmuth, C. E.: Pentothal Anesthesia in Infants and Children, Cleveland Clin. Quart. **20**: 381-388 (July) 1953.

4. Leigh, M. D., and Belton, M. K.: Pediatric Anesthesia, New York, the Macmillan Company, 1948, pp. 10-11.

used during the course of anesthesia are administered through syringes already connected to the stopcock manifold (fig. 4). This series of syringes and stopcocks expedites the administration of drugs. Only 2 cc. of glucose solution is needed to push the accurately measured

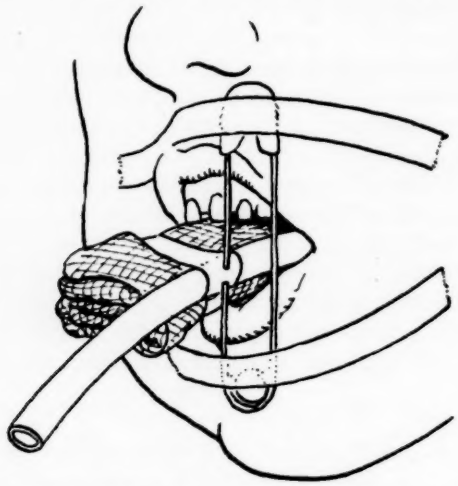

Fig. 2.—The endotracheal tube anchored at the lips. A safety pin that pierces the adhesive tape around the bite block and tube is inserted in the wall but not within the lumen of the endotracheal catheter. Endobronchial intubation is unlikely. If not contraindicated by the surgical procedure, adhesive tape can be used to anchor the safety pin to the face.

amount of agent through the tubing into the circulation of the patient. If blood and other fluids are needed, they may be accurately measured and rapidly administered with a syringe through one of the stopcocks in this series. The use of dilute solutions of thiopental (0.5% to 1%) enables the accurate administration of small doses. The

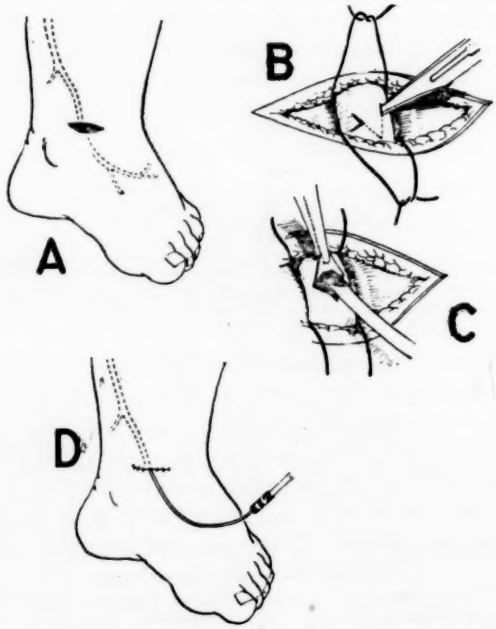

Fig. 3.—Venesection performed on the saphenous vein at the anterior aspect of the internal malleolus.

initial and trial dose is 5 mg. (1 cc. of 0.5% solution thiopental sodium). This first injection allows the anesthetist to judge the individual tolerance for the drug. Since larger doses are required for maintenance of anesthesia in older children, more concentrated solutions (1% to 2%) are used. Additional injections, based on response to the trial dose, are made until the patient reaches the desired level of anesthesia. The depth of anesthesia is gauged on the basis of the respiratory rate and the pain response. An increasing respiratory rate denotes a light plane of anesthesia. When an overdose of solution has been administered, apnea results. After the desired level of anesthesia is attained, maintenance doses are smaller and their effect is more prolonged. When excessive amounts are injudiciously administered, the recovery period is undesirably extended.

By means of a to-and-fro system equipped with a soda-lime canister (fig. 5), the lungs are inflated with rhythmic positive pressure, the exchange being in excess of the normal tidal air. Should the surgical procedure necessitate the prone position, respiratory assistance is given by aiding each respiration, because only in this way can adequate oxygenation and carbon dioxide elimination be guaranteed. If it is possible to inject procaine into the line of incision, the patient can be maintained in a light plane of hypnosis. The total dose of procaine should

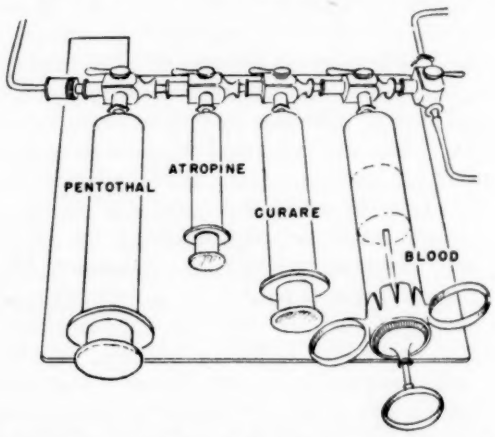

Fig. 4.—Three-way stopcocks joined to form a manifold to facilitate the administration of the anesthetic agents. A Sana-Lok (B-D) syringe may be used for the administration of accurately measured amounts of blood.

not exceed 10 mg. per pound of body weight. In most instances, with local analgesia, thiopental is administered only to keep the patient asleep and to prevent motion. Extubation is performed when the patient has reacted and while he is still in the recovery room. Irritation of the mucous membranes and laryngeal edema are avoided by early extubation.

COMMENT

Intravenous thiopental anesthesia in infants and children is practical and safe. In this series of 623 patients, 58% underwent neurosurgical procedures. This high percentage of neurosurgical cases is attributed to the fact that it was in neurosurgery that this anesthetic method was first attempted, after which the use spread to the other surgical services. Of the remaining 42% of patients, 12% underwent genitourinary surgery, 8% thoracic surgery, 8% ear, nose, and throat surgery, 6% general surgery, 4% plastic surgery, and 2% each ophthalmologic surgery and orthopedic surgery. There were no operative deaths or serious anesthetic complications in this series. Postoperative laryngeal edema was not observed. The six postoperative deaths that occurred were not attributed to anesthesia.

As to age distribution, 33% of the patients were 10 years old, 36% were between the ages of 5 and 10, and 31% were 4 years old or younger. Of the 36% between the ages of 5 and 10, 10% were 9 years old, 8% were 8 years old, 4% were 7, 8% were 6, and 6% were 5 years old. Of the 31% of patients less than 5 years old, 9% were 4 years old, 6% were 3, 2.5% were 2, and 13.5% were 1 year old or younger. Of patients less than one year old, 6% were 6 months old or older, 5% were between 1 and 6 months old, and 2.5% were 1 month old or younger; the youngest patient was 5 days old.

Endotracheal intubation was used with all children under the age of 5 years. It was used less and less frequently in older children; in patients from 5 to 10 years old, it was used in 82%, 74%, 49%, 56%, 42%, and 38% in almost steadily diminishing frequency. In the older children, intubation was performed only when it was required by the type of surgery. Endotracheal intubation is a necessity not only to preserve the airway but to reduce the dead space to the smallest possible amount.

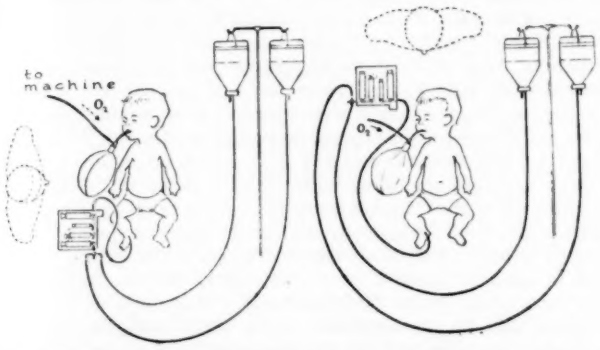

Fig. 5.—Left, anesthesia set-up with the anesthetist (dotted lines) located at the side of the patient during surgery of the head. Bottles contain glucose and blood. Right, anesthesia set-up with the anesthetist at the head of the patient.

SUMMARY

The administration of thiopental sodium solution to infants and children is both safe and practical. Medicaments can be administered intravenously by the use of polyethylene catheters and the venous cutdown on the saphenous vein at the level of the medial malleolus. Endotracheal intubation is recommended in all patients less than 5 years of age and in all patients regardless of age who are to have surgery of the head and neck.

2020 E. 93rd St. (6) (Dr. Wasmuth).

Tumors of the Pancreas.—The main bulk of the pancreas consists of a mass of acini from which the pancreatic digestive juice is discharged through a system of ducts into the duodenum. Scattered through the substance of the gland are the islets of Langerhans, small clusters of cells with a rich blood supply but no ducts, whose function is to secrete insulin. Tumors derived from the islets of Langerhans are nearly always benign. They are of clinical interest as a cause of hyperinsulinism and spontaneous hypoglycemia. By far the most common tumor of the acinar tissue is carcinoma of the pancreas. Other primary tumors are known to occur, e. g., cystadenoma and sarcoma, but they are rare and of small importance compared with carcinoma of the pancreas and islet-cell tumor.—K. Black, M.D., Tumors of the Pancreas: With Particular Reference to Spontaneous Hypoglycemia, *The Practitioner*, September, 1954.

CLINICAL NOTES

STOMACH TUBE WITH OBTURATOR FOR DIAGNOSIS OF STOMACH CANCER

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and
Julius Wolf, M.D., Bronx, N. Y.

Routine upper gastrointestinal roentgenographic studies often fail to reveal early carcinomas of the fundus of the stomach because of the relative difficulty of examining this region. Roentgenologists' "myopia," as Wangensteen has called it,[1] is in part due to the inaccessibility of this region to palpation. Occasionally the flexible gastroscope will encounter an area of fixed obstruction in the cardia of the stomach when roentgenographic studies have failed to demonstrate any disease.[2] We have encountered similar obstruction to the passage of a wide bore rubber tube with flexible obturator in 13 cases of cancer about the cardia or fundus of the stomach when gastrointestinal roentgenographic studies were considered to be normal. All these patients were referred for gastroscopy because of the persistent suspicion of cancer. Since it is our routine practice to aspirate the stomach with this wide bore rubber tube prior to gastroscopy, the obstruction was first encountered by the tube and then by the gastroscope. Our experience in these 13 cases has led us to feel that regular use of such a tube in examinations of the upper gastrointestinal tract would lead to earlier diagnosis of cancer of the cardia of the stomach when the roentgenographic studies are still normal. This examination could be done as a simple office procedure, unlike gastroscopy.

METHOD

The use of a wide bore stomach tube with a flexible metal obturator inserted into the lumen for examination of the lower esophagus and cardia of the stomach was recommended in 1928.[3] Recently its use in the diagnosis of idiopathic cardiospasm was described.[4] The tube is rubber and of 34 F. caliber. The flexible metal obturator is inserted into the lumen. The tube is marked at 40 cm., about the distance of the cardia from the incisors. No preparation of the patient is needed, and he may be sitting or reclining. The tube is inserted into the mouth and with the index finger of the left hand is guided into the esophagus. It is then quickly passed into the stomach unless there is obstruction.

From the Department of Medicine, Columbia College of Physicians and Surgeons, and the Presbyterian Hospital, New York, and the Medical Service of the Veterans Administration Hospital, Bronx, N. Y.

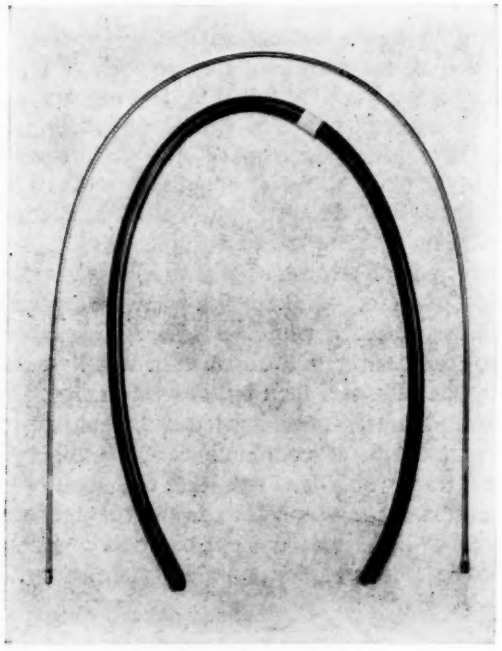
1. Wangensteen, O. H.: Cancer of the Esophagus and the Stomach, Monograph 6 in Early Recognition of Cancer Series, New York, American Cancer Society, Inc., 1951, p. 53.

2. (*a*) Wirts, W. C.: The Gastroscopic Diagnosis of the Location and Extent of Gastric Cancer, Gastroenterology **11**: 861-872, 1948. (*b*) Schindler, R.: Gastroscopy: The Endoscopic Study of Gastric Pathology, ed. 2, Chicago, University of Chicago Press, 1950, p. 89.

3. Crump, A. C., in Bedside Diagnosis, Blumer, G., editor, Philadelphia, W. B. Saunders Company, 1928, vol. 1, chap. 10.

4. Crump, A. C.; Flood, C. A., and Hennig, G. C.: Results of Medical Treatment of Idiopathic Cardiospasm, Gastroenterology **20**: 30-38, 1952.

As stated above, we encountered 13 patients in whom examination with the stomach tube with obturator led to a correct diagnosis that would not otherwise have been made until later. Ten of the patients had carcinoma of the cardia of the stomach, one had carcinoma high in the pars media, and two had retroperitoneal tumors that compressed the stomach at the esophageal-cardiac junction. In 10 persons the stomach tube with obturator met a fixed point of obstruction at the cardia, in one patient the obstruction was just below the cardia, and in two the tube could be passed a short distance into the stomach, but a peculiar dragging sensation was noted. In the cases in which gastric analyses were made there was no apparent obstruction to the passage of a Levine or Ewald tube. Esophagoscopy was done in five patients; the esophagoscopist was able to find the tumor in one and encountered a constriction in one other. In two cases



Flexible metal obturator with rubber tube.

he was able to pass the rigid esophagoscope into the stomach, while the more flexible rubber tube met obstruction. The clinical histories and diagnostic studies done in these cases are summarized in tables 1 and 2.

REPORT OF CASES

Case 1.—A 60-year-old white man was admitted to the hospital in December, 1952. He had been well until three months prior to his admission, when he noted the onset of steady midabdominal pain that was most prominent immediately after meals and at night. Two months prior to admission he was seen in the outpatient service, where an upper gastrointestinal roentgenogram series was made and found to be normal. The pain continued as before; there was no dysphagia, nausea, vomiting, or melena. Three days before admission the patient was seized with sudden, severe periumbilical pain, much more severe than that previously noted, with radiation to both shoulders and distention of the abdomen. There were no chills, nausea, vomiting, or constipation. Because of the persistence of the pain, the patient came to the admitting office; a roentgenogram of the abdomen was made and showed air under both leaves of the diaphragm. He was admitted to the hospital about 72 hours after the onset of symptoms, with the admitting diagnosis of a perforated viscus. The patient appeared acutely ill. His oral temperature was 100 F, pulse rate 90 beats per minute, blood pressure 115/70 mm. Hg. The only significant abnormalities were found on examination of the abdomen. There was rigidity and spasm over the right upper quadrant and epigastrium. There was slight rebound tenderness referred to those areas. The area of liver dulness was reduced; no masses could be felt; and rectal examination was normal. The leukocyte count was 7,300 per cubic millimeter, with 84% neutrophils, of which 7% were bands. The alkaline phosphatase was 13.2 Shinowara units, a slight but significant elevation. Several stools were negative for occult blood; all other laboratory tests were normal.

The patient was treated with continuous suction of the stomach, parenterally administered fluids, and penicillin and streptomycin. Within three weeks he had completely recovered, and then the search for the site of perforation began. After the gastrointestinal studies carried out two months earlier were reviewed and found to be normal, a second examination was performed, and it also appeared normal. A gastric analysis revealed achlorhydria to histamine. The survey of the rest of the gastrointestinal tract appeared normal. Because of a feeling of dissatisfaction with a diagnosis of perforated peptic ulcer, it was decided to use gastroscopy. An attempt was made to aspirate the stomach prior to gastroscopy, but the stomach tube with obturator met an obstruction at the cardia of the stomach that could not be bypassed; the gastroscope met a similar fixed obstruction. After this, an esophagoscopy was performed on the patient. Although a small raised area of mucosa was seen at 38 cm., a biopsy of this area revealed only normal mucosa. Two additional roentgenographic studies of the esophagus and upper stomach were made, one with use of potassium sodium tartrate and sodium bicarbonate (Seidlitz powders). While the fundal area of the stomach presented some changes in the character of the rugal folds, no definite lesion could be found. Owing mainly to the finding of a fixed obstruction to the stomach tube, and in spite of negative roentgenographic studies, laparotomy was performed. Diffuse peritoneal and subhepatic white nodular deposits were encountered, and a hard, white, malignant-appearing tumor was seen high on the lesser curvature of the stomach. Biopsy of the primary and secondary tumors confirmed the diagnosis of adenocarcinoma of the stomach.

Case 2.—A 42-year-old white man noted anorexia, abdominal pain, and weight loss of 35 lb. (15.9 kg.) over a five month period. During the first month of his illness he was seen in the outpatient service, and his stomach was examined by roentgenographic study, which showed no abnormalities. On his admission to the hospital another gastrointestinal series was done; this too was normal. There was no free hydrochloric acid on gastric analysis. The stomach tube with obturator could not be passed beyond a fixed point at the cardia, and the gastroscope met the same obstruction. Because of this finding an exploratory operation was performed. The stomach was the site of a diffusely infiltrating carcinoma, most marked in the cardiac portion, with an indurated ulcer on the gastric side of the esophageal-gastric junction.

Case 3.—A 64-year-old Negro man with a one year history of epigastric pain and weight loss had three normal gastrointestinal roentgenographic examinations done by private physicians prior to being referred to the hospital. Physical examination was normal; a gastrointestinal study done in the hospital did not demonstrate any lesion. The stomach tube with obturator and the gastroscope could not be passed into the stomach. Because of this finding three additional roentgenographic examinations of the stomach were done; all were normal. Esophagoscopy was performed on the patient twice. In one instance the rigid esophagoscope was passed into the stomach but no lesion was seen. Because of the obstruction to the passage of the stomach tube exploratory operation was performed, and a 6 by 10 by 5 cm. adenocarcinoma was found encircling the cardia.

Case 4.—A 49-year-old white man had a seven month history of right upper quadrant pain. There were no significant physical findings, and when three roentgenographic studies of the stomach over a period of five months were normal the patient was thought to be neurotic. When he began to note dysphagia, normal results on esophagoscopy tended to confirm

the impression that the symptoms were psychogenic; however, the stomach tube met obstruction at a fixed point at the cardia. The patient was operated on, and a retroperitoneal tumor obstructing the cardia was found.

TABLE 1.—*Chief Symptoms in Patients with Carcinoma of Cardia or Fundus of Stomach*

Case No.	Age, Yr.	Dysphagia	Anorexia	Anemia	Pain	Weight Loss
1	60	No	No	No	Mild	No
2	42	No	Yes	No	Yes	Yes
3	64	No	No	No	Yes	Yes
4	49	Late	No	No	Yes	No
5	57	No	Yes	Yes	No	Yes
6	54	Transitory	No	No	No	Yes
7	37	No	No	Yes	No	No
8	60	No	No	No	Yes	No
9	56	No	No	No	Yes	No
10	63	No	No	No	Yes	Yes
11	42	Yes	No	No	No	Yes
12	66	No	No	No	Yes	No
13	50	No	No	No	Yes	Yes

Even with the aid of the retrospective knowledge of the laparotomy findings, the primary lesions could not be definitely located.

There were six esophagoscopic examinations, four were normal. In one case a constriction was seen, but the piece of mucosa taken for biopsy was reported as normal. One examination disclosed the cancer. The obstruction that was demonstrated by the stomach tube with obturator usually was not sufficient to interfere with the passage of barium or food. Only one patient complained of dysphagia at the time of admission, another had transitory symptoms of difficulty in swallowing before hospitalization, while in a third dysphagia developed late in the illness (table 1). Gastric analysis was performed in eight cases. No free acid was obtained in six patients after histamine stimulation. What is more important, however, is that a smaller Levine or Ewald tube

TABLE 2.—*Results of Diagnostic Procedures in Thirteen Patients with Carcinoma of Cardia or Fundus*

Case No.	Upper Gastrointestinal Series	Gastric Analysis	Esophagoscopy	Tube with Obturator	Gastroscopy	Diagnosis
1	Normal (4)*	Achlorhydria	Negative (1)	Fixed obstruction	Fixed obstruction	Carcinoma of fundus
2	Normal (2)	Achlorhydria	.....	Fixed obstruction	Fixed obstruction	Carcinoma of cardia
3	Normal (7)	.....	Negative (2)	Fixed obstruction	Fixed obstruction	Carcinoma of cardia
4	Normal (3)	.....	Negative (1)	Fixed obstruction	Fixed obstruction	Retroperitoneal tumor
5	Normal (1)	Achlorhydria	.....	Fixed obstruction Blood aspirated	Fixed obstruction	Carcinoma of fundus
6	Normal (2)	.....	.....	Fixed obstruction Blood aspirated	.....	Carcinoma of upper third of stomach
7	Normal (2)	Achlorhydria	.....	Dragging sensation below cardia	Dragging sensation below cardia Lesion not seen	Carcinoma of stomach with involvement of cardia
8	Diverticulum of stomach (1)	.....	Found tumor (1)	Fixed obstruction	Fixed obstruction	Carcinoma of fundus
9	Atrophic gastritis (1)	Achlorhydria	.....	Fixed obstruction Blood aspirated	Fixed obstruction	Carcinoma of stomach
10	Normal (2) Carcinoma of stomach (1)	Achlorhydria	.....	Fixed obstruction just below cardia Blood aspirated	Lesion visualized	Infiltrated carcinoma of upper pars media
11	Atrophic gastritis (1)	.....	.....	Dragging sensation below cardia Blood aspirated	Fixed obstruction	Carcinoma of fundus
12	Normal (2)	Free hydrochloric acid	Constriction (1) Negative biopsy	Fixed obstruction	Fixed obstruction	Carcinoma of fundus
13	Indentation of cardia by liver (1)	Free hydrochloric acid	.....	Fixed obstruction	Fixed obstruction	Retroperitoneal tumor

* Figures in parentheses indicate number of tests made with listed results.

COMMENT

Thirteen patients with carcinoma of the fundus of the stomach or retrogastric tumor had a total of 33 separate roentgenographic examinations of the upper gastrointestinal tract. Only 3 out of the 33 examinations demonstrated the malignant lesion and even then only after the findings with the stomach tube with obturator emphasized the possibility of a fundal carcinoma. Three additional roentgenographic studies were doubtful but not definitely abnormal. Atrophic gastritis was reported twice. It is interesting that the patient in case 3 had seven separate studies done at various times because his history was so suggestive of gastric disease. However, the small carcinoma encircling the cardia could not be located by the radiological examinations. In two other patients special studies of the cardia and fundus were performed at our insistence, but the lesion was not found. Not all the roentgenographic studies could be obtained for review, but those that we were able to locate were reviewed by the radiological consultants.

appeared to encounter no obstruction to its passage into the stomach. In most of these cases gastric contents were obtained, but there is a possibility that the tube coiled up in the lower esophagus in some. In five cases bright blood was aspirated through the stomach tube after the obturator was withdrawn. The material from one case was studied by the Papanicolaou technique, and malignant cells were found. A retrograde curet has been used to obtain biopsy specimens from the upper stomach and lower esophagus.[5] This procedure might have been of diagnostic value in this group of cases when a flexible wire could have been passed through the cardia. Unfortunately, this was not attempted in any of these cases.

In carrying out the examination the large bore tube and the presence of the obturator are usually both necessary. Smaller Levine tubes revealed no obstruction in the eight cases in which gastric analysis was done, and

5. Crump, A. C., and Hennig, G.: The Diagnosis of Carcinoma of the Esophagus: The Method of Biopsy with the Retrograde Curette, Gastroenterology **13**: 153-159, 1949.

the stomach tube without obturator also frequently passed the obstructing area as in case 10 (table 2). The presence of the obturator enables the examiner to feel the obstructing lesions and, in addition, permits maneuverability. Normally the stomach tube with obturator will pass smoothly into the stomach with little sense of resistance. Temporary resistance may be encountered, on occasion, at the level of the cricopharyngeal muscle and at the cardia. This temporary spasm lasts only a few seconds and usually occurs in apprehensive patients. Obstruction to the stomach tube above the level of the cardia is usually due either to carcinoma or benign inflammatory stricture and less often to benign tumors or extrinsic pressure and other rare lesions. These can usually be easily diagnosed by either roentgenographic study or esophagoscopy. Obstruction at the cardia can be due to carcinoma of the cardia or fundus of the stomach or to a retroperitoneal tumor about the cardia; however, obstruction at the cardia is also encountered in idiopathic cardiospasm, inflammatory stricture of the lower esophagus, or hiatus hernia. These conditions usually present a typical history and characteristic roentgenographic findings. Dysphagia is a constant finding in cardiospasm, while it occurred in only 3 out of our 13 cases; also the dilatation of the lower esophagus seen in idiopathic cardiospasm was not present in our cases. In cardiospasm the obstruction to the stomach tube may be either temporary or persistent, but as a rule the obstruction does not feel fixed. The tube, with the obturator still in, lying free against the diaphragm, transmits diaphragmatic motion that occurs with respiration, retching, or coughing. This is in distinct contrast to what was encountered in 11 of our 13 cases. In these patients the end of the tube was fixed at the level of the malignant growth, and the examiner could not feel diaphragmatic motion transmitted through the tube when the patient was asked to cough. This finding has been termed "fixed obstruction." In two patients the tube passed the cardia, but then the examiner felt an abnormal dragging sensation as he attempted to pass the tube further into the stomach. In some patients with a cascade or "cup and spill" stomach, it is also impossible to pass the stomach tube into the distal stomach. In these instances, however, the dragging sensation is not encountered, and, in addition, this particular configuration of the stomach is easily seen on roentgenograms.

Gastroscopy was of additional help only in case 10. In occasional cases of cancer high in the fundus the gastroscope can be passed partly into the stomach and the lesion visualized. Wirts,[2a] Schindler,[2b] and others have noted the same type of fixed obstruction to the gastroscope as we have encountered with the stomach tube in patients with cancer of the fundus in whom the roentgenograms were normal. However, the use of the gastroscope requires special training, experience, and equipment that is not available to everyone. Although we encountered this obstruction while preparing to use the gastroscope in our patients, the examination can be done without any plans for gastroscopy. Actually, in all the cases but one, gastroscopy afforded no additional information. It might be possible to make an earlier diagnosis of lesions in the fundus of the stomach if the examination with the stomach tube with obturator were done as part of the regular examination of patients suspected of having cancer of the stomach.

CONCLUSIONS

The diagnosis of cancer of the fundus and cardia of the stomach by radiological examination is often a difficult problem. Thirteen cases of carcinoma in the region of the gastric cardia were studied in which the original upper gastrointestinal study was normal but obstruction was noted on passage of a 34 F. stomach tube with flexible obturator. This procedure was routine prior to gastroscopy in a group of patients with unexplained upper gastrointestinal symptoms. It is felt that more frequent use of this simple office procedure in cases in which there is clinical suspicion of disease at the cardia or fundus will help in making earlier diagnosis of cancer in these regions.

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FATAL CASE OF IRON INTOXICATION IN A CHILD

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and
Alexander A. Kosinski, M.D., Johnson City, N. Y.

Acute iron intoxication in children has now been sufficiently well documented to have become a readily recognized clinical entity; it seems worth while to report this additional case because the number of recorded cases is still small and because this case presents the unusual features of severe hepatic and renal damage.

REPORT OF A CASE

The patient was a 21-month-old white girl who was admitted to the Charles S. Wilson Memorial Hospital on June 7, 1953, with a history of having ingested a large (but unknown) number of iron-containing capsules about eight hours previously. (The composition of these capsules is given by the manufacturer as dried ferrous sulfate 0.162 gm., liver concentrate N.F., 0.17 gm., and dried yeast.) Before admission the child had been vomiting and having diarrhea and had gradually lapsed into unconsciousness. On arrival at the hospital, she appeared lethargic and dehydrated. She was in shock; no blood pressure was obtainable, the pulse was rapid, and the skin was cool. Her pupils were dilated and reacted sluggishly to light. Noisy, irregular respirations and coarse bronchial rales were heard. Plasma, blood, and other fluids were given intravenously. The patient appeared to rally but continued to have intermittent hematemesis and bloody diarrhea. Approximately 48 hours after she had ingested the pills, the child died suddenly in acute pulmonary edema.

Autopsy disclosed diffuse and severe congestion of all the viscera. Petechial hemorrhages were noted in the pericardium, pleurae, thymus, and adventitia of the aorta. The right and left lungs weighed 195 gm. and 160 gm., respectively. They were bulky, congested, and readily oozed blood and foam. Although the gastrointestinal tract was patent throughout, superficial hemorrhages were present in the mucosa of the stomach, lower ileum, and rectosigmoid colon. In addition, two superficial dark gray ulcerations, each about 2 mm. in diameter, were found in the fundus of the stomach. The liver weighed 480 gm. Its inferior aspect showed an orange-yellow speckling, which on section was seen to extend deep into the parenchyma. The organ was rather soft and intensely congested. The kidneys were unusually heavy,

From the Charles S. Wilson Memorial Hospital Pathology Laboratory. Dr. Raeburn Wharton gave permission to report this case.

weighing 80 and 60 gm. The cortices, bulging and yellowish-tan, were sharply demarcated from the congested medullae. Blood studies performed on specimens obtained at autopsy (two hours post mortem) revealed a nonprotein nitrogen level of 121 mg. per 100 cc. and a serum chloride level of 540 mg. per 100 cc. The Wassermann reaction was negative.

Microscopic examination generally confirmed the gross findings. The lung parenchyma and pleurae were congested, focally hemorrhagic, and edematous. No pneumonic process was observed; however, small lymphocytic infiltrations around the bronchi were considered evidence for an unrelated chronic bronchitis. The stomach and small intestine showed mucosal lesions that were largely limited to the superficial portions bordering the lumen. Occasionally the necrosis extended more deeply into the mucosa, forming small focal ulcerations covered by a purulent exudate. Diffuse congestion, edema, and tiny hemorrhages were found throughout the sections. Considerable accumulations of dark brown granular pigment were noted within the mucosal glands and stroma. The liver parenchyma revealed a patchy but diffuse degeneration, haphazard in its distribution and varying in severity from cloudy swelling to actual necrosis. The lobular pattern was disturbed in the areas where cords of liver cells were broken up or irregular segments of parenchyma were shrunken. The extreme engorgement of the sinusoids and the presence of many new and recent hemorrhages suggested that much of the pigment present was of hemic origin. The adrenal glands were congested, with focally hemorrhagic medullae. Depletion of cytoplasm in the cortical cells was fairly prominent. The kidneys were involved by a severe tubular nephrosis. Extensive degeneration and necrosis of the tubular epithelium were found, with no particular regard for any upper or lower nephron localization. The tubular lumens contained desquamated lining cells and irregular clumps and granules of amorphous material.

The presence of granular brown pigment in many of the tissues studied aroused the suspicion that the material might represent the toxic agent. In order to distinguish this material from any breakdown product of hemoglobin, tissue sections were washed to remove formaldehyde fixation pigment and stained by the Turnbull blue method for reduced iron. By this means, iron was demonstrated in the gastric and intestinal mucosa. It had impregnated the surface epithelium; it was present in the lumens of the glands and in the small veins, often appearing concentrated in the endothelium. The rather large amounts of pigment in the liver were apparently of hemic origin or else represented some altered product of the absorbed metal; no reduced iron was found in the liver. The kidney sections, stained by the Turnbull method, revealed numerous tubular casts of the characteristic blue color indicative of reduced iron.

COMMENT

The case reported here illustrates many features common to other reported cases of acute iron intoxication.[1] The patient is usually a young child who has accidentally ingested a large amount of some medicinal iron preparation. In a few hours he appears quite ill, pale, restless, and nauseated. Vomiting and diarrhea are common but not invariable. Gradually the child becomes drowsy and lethargic, often lapsing into semiconsciousness or coma. Signs of peripheral circulatory failure then intervene: a falling blood pressure, rapid pulse, and cool, cyanotic skin. The first "danger period" is this early phase of about four to six hours, when the patient may die in an apparent state of shock. Often, however, the child seems to improve rapidly during the next 12 to 24 hours, only to die suddenly during the second danger period, 24 to 48 hours after the ingestion of the iron.[2] At autopsy, the most striking lesions are seen in the gastrointestinal tract, where the escharotic action of the metal has produced mucosal necrosis, congestion, and focal hemorrhages in the stomach and small intestine. Diffuse congestion and petechial hemorrhages of the other viscera are usually present. Hepatic and renal lesions are variable. Mild degenerative changes (cloudy swelling) are described. Rarely, more severe lesions such as focal necrosis are found in the liver.[3]

Approximately one-half of patients ill enough to attract attention as examples of iron intoxication have recovered. Clinical studies of ill and convalescing patients are rather meager. Spencer [2] reports that the serum iron may rise to 15 to 100 times its normal level. Abnormal results were obtained when liver function tests were performed on several recently recovered patients. Murphy and co-workers,[3] however, were unable to find evidence of hepatic or renal damage in their case. In our case, both the liver and the kidneys showed unusually severe degenerative changes.

The mechanism of action of iron as a toxic agent is unknown. Most investigators are in agreement that the early symptoms of vomiting, diarrhea, and dehydration are due to the corrosive action on the gastrointestinal mucosa, leading to ulceration, edema, and loss of fluid into the gastrointestinal tract. Furthermore, this destruction doubtless abolishes the normal "mucosal block" that ordinarily inhibits the absorption of more than small amounts of iron.[1a] One may postulate that the loss of body fluid via the gastrointestinal tract can produce severe dehydration and irreversible shock in much the same manner as occurs in infant diarrheas. Against this hypothesis it can be argued that in none of the reported cases was the loss of fluid by diarrhea and vomiting considered to be impressive. Also many of the patients were old enough so that such fluid loss as occurred might be expected to be borne with greater impunity. Finally, prompt and energetic efforts to restore the circulating volume were often unsuccessful.

That the basic picture of acute iron intoxication is essentially the same as peripheral circulatory collapse is now widely accepted. As pointed out by J. P. Smith,[4] the cold, cyanotic skin, rapid pulse, and irregular respirations are typical. Restlessness, drowsiness, and coma had earlier led some of the English investigators to propose a specific toxic effect of iron on the central nervous system.[1e] It should be borne in mind, however, that the same symptoms are common in impending shock from any cause. Autopsy findings in the central nervous system in the cases reported to date have yielded nothing conclusive. The greatest interest has been stimulated by the work linking iron intoxication to the vasodilator material (VDM) shown to be present in the blood of animals in experimental shock. This substance, normally present in liver and spleen, and capable of producing shock when released into the blood stream, is now believed to be identical with ferritin.[4] The latter, a com-

1. (*a*) Smith, R. P.; Jones, C. W., and Cochran, W. E.: Ferrous Sulfate Toxicity: Report of Fatal Case, New England J. Med. **243**: 641-645 (Oct. 26) 1950. (*b*) Poisoning from Accidental Ingestion of Medicinal Iron, editorial, J. A. M. A. **148**: 1280 (April 12) 1952. (*c*) Duffy, T. L., and Diehl, A.: Ferrous Sulfate Poisoning: Report of Three Cases, J. Pediat. **40**: 1-5 (Jan.) 1952. (*d*) Swift, S. C.; Cefalu, V., and Rubell, E. B.: Ferrous Sulfate Poisoning: Report of Fatal Case, ibid. **40**: 6-10 (Jan.) 1952. (*e*) Forbes, G.: Poisoning with Preparation of Iron, Copper, and Manganese, Brit. M. J. **1**: 367-370 (March 22) 1947.

2. Spencer, I. O. B.: Ferrous Sulfate Poisoning in Children, Brit. M. J. **2**: 1112-1117 (Nov. 10) 1951.

3. Murphy, J. W., and others: Acute Iron Poisoning: Report of Case and Review of the Literature, Arch. Pediat. **68**: 303-308 (July) 1951.

4. Smith, J. P.: The Pathology of Ferrous Sulfate Poisoning, J. Path. and Bact. **64**: 467-472 (July) 1952.

pound of iron with the protein apoferritin, represents a normal storage form of iron and also the immediate product of iron absorption in the intestinal mucosa. It is postulated that excess absorption of iron leads to excess formation of ferritin, resulting in severe and prolonged shock.[4] The diffuse and nonspecific nature of the anatomic lesions is not particularly helpful in elucidating the mechanism of iron toxicity. Nevertheless, the histological findings in these organs are consistent with those produced by anoxia secondary to peripheral circulatory collapse, except, of course, for the presence of iron in the renal tubules. In regard to this latter finding, the situation is analagous to that in the "crush" syndrome and the hemoglobinuric nephroses. The tubular casts may possibly come to be considered as incidental rather than as a direct causative feature.

33-37 Harrison St. (Dr. Kosinski).

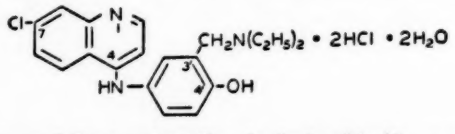
COUNCIL ON PHARMACY AND CHEMISTRY

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for inclusion in New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

R. T. STORMONT, M.D., *Secretary*.

Amodiaquin Hydrochloride.—Camoquin Hydrochloride (Parke, Davis).—$C_{20}H_{22}ClN_3O.2HCl.2H_2O$.—M.W. 464.81—4-(7-Chloro-4-quinolylamino)-α-diethylamino-*o*-cresol dihydrochloride dihydrate.—7-Chloro-4-(3′-diethylaminomethyl-4′-hydroxyanilino) quinoline dihydrochloride dihydrate.—The structural formula of amodiaquin hydrochloride may be represented as follows:



Actions and Uses.—Amodiaquin hydrochloride, a synthetic antimalarial agent, is equal to chloroquine phosphate in antimalarial potency and has the same relatively low toxicity. Like chloroquine, the activity of amodiaquin is limited to the erythrocytic stages of malaria (parasitemia). The drug is capable of producing a radical cure only for infection caused by Plasmodium falciparum; it abolishes the acute attack and eradicates the infection. In infections caused solely or complicated by P. vivax or P. malariae, it is ineffective as a prophylactic against primary infection or relapses but is effective for the treatment of acute attacks to relieve clinical symptoms, to control parasitemia, and to increase the interval between treatment and relapse. Amodiaquin hydrochloride therefore is indicated as a suppressive agent in areas of endemic malaria.

Amodiaquin hydrochloride is rapidly and almost completely absorbed from the gastrointestinal tract. It is distributed unequally in body tissues, where it is present in higher concentrations than in plasma; its concentration in erythrocytes is about twice that found in plasma. It is also concentrated in the spleen, liver, and kidneys. The drug is retained in the tissues from which it is gradually liberated into the blood stream; it is slowly excreted in the urine after administration is discontinued. Clinical side-effects are chiefly those of the gastrointestinal tract (nausea, vomiting, salivation, and diarrhea) and of the central nervous system (incoordination, spasticity, and convulsions), but these seldom are encountered at therapeutic dosage levels. It does not produce discoloration of the skin. Complications have not been encountered in the presence of kidney or liver disease, nor during pregnancy.

Dosage.—Amodiaquin hydrochloride is administered orally. Dosage is expressed in terms of the base. For the treatment of acute attacks of malaria, the usual single dose for adults is 0.4 to 0.6 gm. The usual dosage for children, given either as a single dose or in three divided doses at 12 hour intervals, is as follows: 1 to 2 years, 0.1 gm.; 3 to 5 years, 0.2 gm.; 6 to 15 years, 0.4 gm.; 15 years and above, adult dose. For suppression of endemic malaria, the usual dosage for adults is 0.4 to 0.6 gm. administered once every two weeks; for children, the dosage should be reduced according to age and spaced at the same interval.

Tests and Standards.—

Physical Properties: Amodiaquin hydrochloride is a yellow, odorless, bitter, crystalline solid, m.p. 150-160° (with decomposition). It is soluble in water; sparingly soluble in alcohol; and very slightly soluble in benzene, chloroform, and ether. The pH of a 1% solution is 4.0-4.8.

Identity Tests: Dissolve 0.1 gm. of amodiaquin hydrochloride in 25 ml. of water. If a clear solution is not obtained, filter through a no. 40 Whatman filter paper. Slowly and with constant stirring add 3 ml. of filtered ammonia T.S. to the solution. Allow the mixture to stand for about 30 minutes with occasional stirring. Filter the mixture through a fritted glass crucible and wash the precipitate with five 10 ml. portions of ammonia solution (1:100). Dry the precipitate for three hours at 105°: the amodiaquin base melts with decomposition at 205-207°. Acidify the filtrate with nitric acid and add 1 ml. of silver nitrate T.S.: a white precipitate forms that is insoluble in diluted nitric acid but soluble in ammonia T.S. *(presence of chloride).*

A 0.0008% solution of anhydrous amodiaquin hydrochloride, prepared as described in the assay for amodiaquin, exhibits absorption maxima at about 224 and 342 mμ [specific absorbancy, E(1%,1 cm.), 394-410], a minimum at about 300 mμ, and points of inflection at about 236 and 246 mμ. The ratio of absorbancies at 224 and 342 mμ is about 2.25.

Purity Tests: Accurately weigh about 0.3 gm. of amodiaquin hydrochloride and determine the water content by the *U. S. P. Karl Fischer method.* The amount of water is not less than 7.0 nor more than 8.5%.

Ignite about 0.25 gm. of amodiaquin hydrochloride, accurately weighed; cool, and weigh: the residue does not exceed 0.6%.

Assay: (Amodiaquin) Prepare a 0.0008% solution of anhydrous amodiaquin as follows. Transfer to a 100 ml. volumetric flask an amount of amodiaquin hydrochloride, accurately weighed, equivalent to about 80 mg. of anhydrous amodiaquin hydrochloride, fill to the mark with 0.1 *N* hydrochloric acid, and mix. Transfer to a second 100 ml. volumetric flask 10 ml. of this solution, fill to the mark with 0.1 *N* hydrochloric acid, and mix. Transfer to a 100 ml. volumetric flask 10 ml. of this last solution, fill to the mark with 0.1 *N* hydrochloric acid, and mix. Spectrophotometrically determine the absorbancy in a 1 cm. quartz cell at 342 mμ, using 0.1 *N* hydrochloric acid as a blank. The concentration of anhydrous amodiaquin hydrochloride in mg./ml. = absorbancy ÷ 40.6. The amount of anhydrous amodiaquin hydrochloride is not less than 95.0 nor more than 105.0%.

Dosage Forms of Amodiaquin Hydrochloride

TABLETS. *Identity Tests:* The solution prepared for the assay of the tablets responds to the spectrophotometric identity test for the active ingredient in the monograph for amodiaquin hydrochloride.

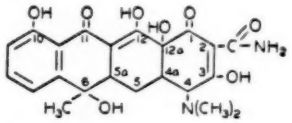
Assay: (Amodiaquin) Weigh 20 tablets and powder them. Transfer to a 250 ml. beaker an amount of powder, accurately weighed, equivalent to about 0.2 gm. of anhydrous amodiaquin hydrochloride, add 100 ml. of 0.1 *N* hydrochloric acid, and heat on a steam bath with occasional stirring. Cool the mixture and filter it through a no. 40 Whatman filter paper. Collect the filtrate in a 250 ml. volumetric flask. Wash the residue with five 20 ml. portions of 0.1 *N* hydrochloric acid, collecting the washings in the 250 ml. volumetric flask. Dilute the filtrate to the mark with 0.1 *N* hydrochloric acid and mix. Transfer to a 100 ml. volumetric flask 10 ml. of this solution, fill to the mark with 0.1 *N* hydrochloric acid, and mix. Transfer to a 100 ml. volumetric flask 10 ml. of this last solution, fill to the mark with 0.1 *N* hydrochloric acid, and mix. Spectrophotometrically determine the absorbancy in a 1 cm. quartz cell at 342 mμ, using 0.1 *N* hydrochloric acid as a blank. The concentration of anhydrous amodiaquin hydrochloride in mg./ml. = absorbancy ÷ 40.6. Each milligram of anhydrous amodiaquin hydrochloride is equivalent to 0.8299 mg. of amodiaquin base. The amount of amodiaquin base is not less than 94.0 nor more than 106.0% of the labeled amount.

Parke, Davis & Company, Detroit.

Tablets Camoquin Hydrochloride: 0.2 gm. Each tablet contains the equivalent of 0.2 gm. of amodiaquin base. U. S. patents 2,474,818 and 2,474,821. U. S. trademark 500,228.

Tetracycline.—Tetracyn (Pfizer).—4-Dimethylamino-1,4,4a,5,5a,6,11,12a-octahydro-3,6,10,12,12a-pentahydroxy-6-methyl-1,11-dioxo-2-naphthacenecarboxamide. Tetracycline is an antibiotic isolated from the elaboration products of certain Streptomyces species when the organism is grown on suitable culture

media. It is also prepared by the catalytic halogenation of chlortetracycline (Aureomycin) or oxytetracycline (Terramycin). It differs from the former only in the replacement of the chlorine atom in the structure by a hydrogen atom, and from the latter only in the replacement of one hydroxyl group by a hydrogen atom. The structural formula of tetracycline may be represented as follows:



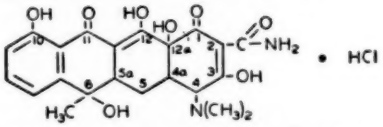
Actions and Uses.—Tetracycline, the base, has the same actions and uses as tetracycline hydrochloride. (See the monograph on tetracycline hydrochloride.)

Dosage.—Tetracycline is administered orally. The dosage is the same as for the hydrochloride, which also is expressed in terms of the base.

Pfizer Laboratories, Brooklyn, N. Y.

Oral Suspension Tetracyn: 1.5 gm. vials. A powder with added flavoring for suspension in distilled water to give a solution containing 25 mg. of tetracycline in each cubic centimeter.

Tetracycline Hydrochloride.—Achromycin Hydrochloride (Lederle).—Tetracyn Hydrochloride (Pfizer).—4-Dimethylamino-1,4,4a,5,5a,6,11,12a-octahydro-3, 6, 10, 12, 12a,-pentahydroxy-6-methyl-1,11-dioxo-2-naphthacenecarboxamide hydrochloride. Tetracycline is an antibiotic isolated from the elaboration products of an unidentified species of Streptomyces when the organism is grown on suitable culture media, or is obtained by catalytic reduction of chlortetracycline (Aureomycin) or oxytetracycline (Terramycin). It differs from the former only in the replacement of the chlorine atom in the structure by a hydrogen atom, and from the latter only in the replacement of one hydroxyl group by a hydrogen atom. The structural formula of tetracycline hydrochloride may be represented as follows:



Actions and Uses.—Tetracycline hydrochloride has actions and uses similar to those of chlortetracycline and oxytetracycline. Clinical evidence indicates that it is useful in the treatment of infections produced by bacteria that have been noted to be susceptible to the antibacterial effects of either of those antibiotics. Information relative to antiviral action against viruses is currently lacking as is also knowledge concerning its effect upon rickettsia. No antifungal activity has been demonstrated for tetracycline. An important finding is that if micro-organisms are resistant to chlortetracycline or oxytetracycline, they tend to be resistant to tetracycline also; however, clinical studies have shown that tetracycline may be effective after treatment with chlortetracycline or oxytetracycline has proved ineffective.

Tetracycline has the same ranges of experimental toxicity, both acute and chronic, that have previously been described for chlortetracycline and oxytetracycline. It is more stable in solution and has a solubility similar to that of oxytetracycline; its solubility is greater than that of chlortetracycline. Following single or repeated doses of tetracycline, its concentration in the blood appears to be at a higher level and is better sustained than has been noted for its predecessors. Tetracycline also passes through the essentially normal blood-brain barrier more easily, so that higher concentrations of this compound have been found in the spinal fluid than of either of the other two agents. Tetracycline is excreted in the urine and in the stool (following oral ingestion) in a similar manner and retains its antibacterial activity in the urine and in the gastrointestinal contents. It is not inactivated by blood serum.

Tetracycline produces nausea, vomiting, and loose stools, but the evidence available indicates that these reactions occur less frequently than with the use of either chlortetracycline, or oxytetracycline. Likewise, tetracycline may allow superinfection of the colon with bacteria and yeasts that are resistant to its antibiotic effects.

Dosage.—Current information indicates that the dosages of tetracycline hydrochloride for varying degrees of illness should be the same as those employed when either chlortetracycline or oxytetracycline is used.

Lederle Laboratories Division, American Cyanamid Company, Pearl River, N. Y.

Capsules Achromycin Hydrochloride: 50, 100, and 250 mg.

Solution Achromycin Hydrochloride (Intravenous): Vials containing 0.1, 0.25, and 0.5 gm. of tetracycline hydrochloride powder. Buffered with ascorbic acid.

Spersoids Achromycin Hydrochloride: 36 and 75 gm. bottles. A flavored powder containing 16.67 mg. of tetracycline hydrochloride in each gram.

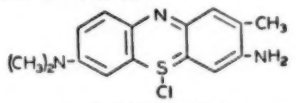
Tablets Achromycin Hydrochloride: 50, 100, and 250 mg.

Soluble Tablets Achromycin Hydrochloride: 50 mg.

Pfizer Laboratories, Brooklyn, N. Y.

Tablets Tetracyn Hydrochloride: 50, 100, and 250 mg.

Tolonium Chloride.—Blutene Chloride (Abbott).—$C_{15}H_{16}ClN_3S$. —M.W. 305.83.—3-Amino-7-dimethylamino-2-methylphenazathionium chloride.—The structural formula of tolonium chloride may be represented as follows:



Actions and Uses.—Tolonium chloride, known as a dye by the name toluidine blue O, exhibits in vitro antiheparin activity. In animals the coagulation times of blood samples known to contain an excess of heparin can be returned to normal by the addition of small amounts of the dye. Clinically, the systemic administration of the dye reduces the bleeding tendency in certain hemorrhagic conditions associated with excessive amounts of heparinoid substances in the blood. Excess of these substances can be determined by a simplified method of protamine titration using protamine sulfate, a known antiheparin compound. A protamine sulfate titration value of 0.14 mg. is considered the upper limit of normal.

Tolonium chloride is useful in the treatment of idiopathic functional uterine bleeding: menorrhagia or hypermenorrhea (abnormally profuse or prolonged menstruation) and menometrorrhagia (excessive or prolonged menstruation and intermenstrual bleeding). Approximately 80% of patients with idiopathic uterine bleeding have elevated protamine titration values, and 75 to 80% of the patients in this category respond to the dye. In patients treated empirically (not selected on the basis of elevated protamine values), the dye reduces bleeding in about 65%. The mechanism of action has not been explained in uterine bleeding that is not associated with elevated protamine titration but that nevertheless responds to the dye. The dye should not be used for the treatment of abnormal uterine bleeding until adequate examination and study have ruled out malignant lesion as the cause and, when so used without protamine titration, only if all other organic diseases have been ruled out.

Tolonium chloride has been demonstrated to have a low order of toxicity in experimental animals; no changes in coagulation time or capillary fragility have been observed. Extremely high doses injected into dogs produce hemolysis, leukocytosis, and thrombosis, but these effects have not been encountered with therapeutic doses in man. Staining of internal organs may be apparent for a period of time following systemic administration of the dye, but no tissue damage has been attributed to this effect. The urine of patients receiving treatment becomes pale blue-green. Therapy also may be associated with such side-effects as nausea, burning on urination, and tenesmus, but these are usually of minor importance in patients consuming adequate fluids. Since the side-effects may respond to increased fluid intake, decreased dosage, or both, it is rarely necessary to discontinue therapy.

Dosage.—Tolonium chloride is administered orally. The usual dosage is 0.2 to 0.3 gm. daily. For the treatment of menorrhagia, the drug is administered with meals during the menstrual period; for the prevention of menorrhagia, it is administered for five or six days prior to the estimated time of the menses. In menometrorrhagia, medication may be extended over two or three menstrual periods.

Tests and Standards.—

Physical Properties: Tolonium chloride is a green, crystalline powder with a bronze luster. It is slightly soluble in alcohol, very slightly soluble in chloroform, and practically insoluble in ether. The approximate amount that dissolves at 25° in water to form 100 ml. of solution is 4 gm.

Identity Tests: Prepare a 0.0003% solution of tolonium chloride in 50% alcohol containing 1% acetic acid. The solution shows absorption maxima at about 245, 290, and 630 mμ.

Purity Tests: Dry about 1 gm. of tolonium chloride at 105° for two hours: the loss in weight does not exceed 10.0%.

Ash about 1 gm. of tolonium chloride, accurately weighed: the residue does not exceed 3.0%. Save the residue for the determination of heavy metals.

Dissolve the residue from the ashing in 20 ml. of hot water containing 2 ml. of diluted acetic acid and run a *U. S. P. heavy metals test:* the amount of heavy metals does not exceed 50 ppm.

Assay: (Nitrogen) Transfer to a semimicro Kjeldahl flask about 0.25 gm. of tolonium chloride, accurately weighed, and run a nitrogen determination by the *U. S. P. semimicro Kjeldahl method.* Each milliliter of 0.1 *N* acid is equivalent to 0.001401 gm. of nitrogen and 0.01019 gm. of tolonium chloride. The amount of nitrogen is not less than 12.4% equivalent to not less than 90.0% of anhydrous tolonium chloride.

(Antiheparin Titration) Prepare the following solutions. Prepare plasma as directed in the *U. S. P. assay for heparin sodium.* Dissolve in 0.9% sodium chloride enough heparin sodium to give about 50 ml. of a solution having a concentration so that the amount of heparin in the test will be 1.0 ± 0.1 U. S. P. heparin units in excess of the amount necessary to prevent 1 ml. of plasma from clotting more than 50%. Transfer to a 100 ml. volumetric flask 25 mg. of anhydrous tolonium chloride, accurately weighed, fill to the mark with 0.9% sodium chloride, and mix. Transfer to a 100 ml. volumetric flask 25 mg. of standard anhydrous tolonium chloride, accurately weighed, fill to the mark with 0.9% sodium chloride, and mix. (The standard may be obtained from Abbott Laboratories.) Transfer 0.5 gm. of calcium chloride to a 50 ml. volumetric flask, fill to the mark with water, and mix.

To each of ten 12 by 100 mm. test tubes add in this order: 0.4 ml. of heparin solution, 1.0 ml. of plasma, then shake well and add the amounts of tolonium chloride solution and 0.9% sodium chloride shown in the following table.

Tube No.	Tolonium Chloride, Ml.	0.9% Saline, Ml.
1	0.10	0.10
2	0.11	0.09
3	0.12	0.08
4	0.13	0.07
5	0.14	0.06
6	0.15	0.05
7	0.16	0.04
8	0.17	0.03
9	0.18	0.02
10	0.20	0.00

Shake the tubes again and add 0.2 ml. of 1% calcium chloride. Mix, allow to stand for one hour, and evaluate the degree of clotting by shaking or tapping each tube vigorously the same number of times in order to break up the clot. Allow the clot to rise and observe the per cent clot in the liquid. Plot milliliters of tolonium chloride against per cent clot and determine the point of 50% clot. Repeat the procedure using tolonium chloride reference standard. If no tube of a series is graded more than 50% or if no tube is graded less than 50%, repeat the assay using appropriately modified dilutions. The % activity = (100 × ml. of std. tolonium chloride) ÷ ml. of sample tolonium chloride. The antiheparin activity calculated on the anhydrous basis is not less than 90.0 nor more than 110.0% of the standard.

Dosage Forms of Tolonium Chloride

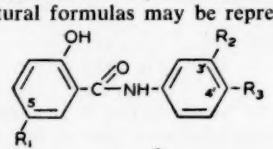
TABLETS. *Identity Tests:* Wash the outer coating from about 10 tablets with water and dry and powder them. From the powder, prepare a 0.0003% solution of tolonium chloride in 50% alcohol containing 1% acetic acid. The solution shows absorption maxima at about 245, 290, and 630 mμ.

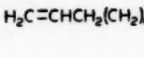
Assay: (Antiheparin Titration) Carefully remove the coating from about 20 tablets by washing them with water. Dry the tablets and grind them to a fine powder. Transfer an amount of powder, accurately weighed, equivalent to 25 mg. of anhydrous tolonium chloride, fill to the mark with 0.9% sodium chloride, and assay as directed in the antiheparin titration in the section on the active ingredient in the monograph for tolonium chloride, substituting the tablet solution for the tolonium chloride solution. The amount of tolonium chloride is not less than 85.0 nor more than 115.0% of the labeled amount.

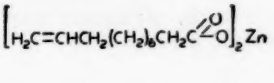
Abbott Laboratories, North Chicago, Ill.

Tablets Blutene Chloride: 0.1 gm.

Zinchlorundesal.—Salundek (New) (Wallace & Tiernan).—A mixture containing 2% 5-chlorosalicylanilide, 1% 5,3′-dichlorosalicylanilide, 1% 5,4′-dichlorosalicylanilide, 3% salicylanilide-N.F., 2% undecylenic acid-N.F., and 10% zinic undecylenate-N.F. Their structural formulas may be represented as follows:







Actions and Uses.—Zinchlorundesal is effective topically in the treatment of tinea capitis caused by Microsporon audouini. Its use generally should be restricted to this purpose because of its potential irritant effects, although zinchlorundesal is also effective in the treatment of superficial dermatomycoses. If a cure is not obtained in four months, x-ray treatment should be considered.

In zinchlorundesal the irritant potentialities of the salicylanilides are minimized because lower concentrations are used, which are nevertheless highly effective when combined with one another and with the relatively nonirritating undecylenic acid components. The fungistatic potency of salicylanilide in vitro is approximately eight times that of undecylenic acid against M. audouini, and the chlorosalicylanilides are 5 to 150 times as active as salicylanilide in inhibiting the growth of this microorganism.

Dosage.—Zinchlorundesal is applied topically in the form of an ointment containing the stated proportions of the active ingredients. It is rubbed on the affected and adjacent areas twice daily.

Tests and Standards.—

For descriptions and standards for salicylanilide, undecylenic acid, and zinc undecylenate, see the National Formulary under Salicylanilide, Undecylenic Acid, Compound Undecylenic Acid Ointment, and Zinc Undecylenate. For tests and standards for 5-chlorosalicylanilide, 5,3′-dichlorosalicylanilide, and 5,4′-dichlorosalicylanilide, see the monographs for these materials.

Dosage Forms of Zinchlorundesal

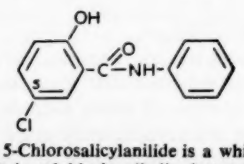
OINTMENT. *Identity Tests:* Mix an amount of ointment equivalent to about 0.1 gm. of salicylanilides with 5 ml. of alcohol and 5 ml. of saturated alcoholic solution of ferric chloride: a violet color develops (*presence of a phenol*).

Assay: (Salicylanilides) Accurately weigh an amount of ointment calculated to contain about 2 mg. of nitrogen. Run a *U. S. P. semimicro Kjeldahl determination.* Each milliliter of 0.01 *N* sulfuric acid is equivalent to 0.002427 gm. of total salicylanilides. The amount of total salicylanilides is not less than 90.0 nor more than 110.0% of the labeled amount.

(Total Acid as Undecylenic Acid) Accurately weigh into a 250 ml. round-bottomed flask an amount of ointment equivalent to about 0.25 gm. of zinc undecylenate. Add 3 ml. of hydrochloric acid and 100 ml. of water, and reflux for one hour. Cool, transfer to a 250 ml. separatory funnel, and extract with four 50 ml. portions of ether. Wash the combined ether extracts with three 15 ml. portions of water and evaporate to about 10 ml. Add 100 ml. of neutralized alcohol and titrate with 0.1 *N* sodium hydroxide, using phenolphthalein T.S. as an indicator. Each milliliter of 0.1 *N* sodium hydroxide is equivalent to 0.01843 gm. of total acid calculated as undecylenic acid. The amount of total acid present is not less than 15.1 nor more than 16.7%.

(Zinc Undecylenate) Accurately weigh an amount of the ointment equivalent to about 2.5 gm. of zinc undecylenate and transfer it quantitatively to a 500 ml. Kjeldahl flask. (Mix the sample with small amounts of water and transfer the slurry.) Add 50 ml. of nitric acid, 25 ml. of sulfuric acid, and enough water to make the total volume about 250 ml. Add a few glass beads and boil until fumes of sulfur trioxide evolve. Cautiously add 1 ml. of nitric acid and boil again until sulfur trioxide fumes evolve. Repeat this operation with successive 1 ml. portions of nitric acid until the solution remains pale yellow. Cool, add 50 ml. of water, and boil until the solution becomes colorless. Cool, dilute, and filter the solution into a 250 ml. volumetric flask, washing the Kjeldahl flask several times with water and finally washing the filter paper. Dilute to 250 ml. with water, mix well, and pipet a 50 ml. aliquot into a 250 ml. beaker. Neutralize the solution with strong ammonia solution, using litmus paper as an indicator, dilute to 100 ml. with water, and add 5 ml. of 10% acetic acid and 2 gm. of sodium acetate. Heat to 60° and, with constant stirring, add 12 ml. of 2% 8-hydroxyquinoline in alcohol. The supernatant liquid should be yellow; add additional reagent, if necessary, to achieve this. Heat to boiling and allow the mixture to stand for one hour. Filter the mixture through a tared filtering crucible. Test the filtrate with a few milliliters of the 8-hydroxyquinoline solution to assure the presence of an excess. Wash the precipitate with 40 ml. of water and dry it for two hours at 130°. Each gram of the precipitate is equivalent to 1.221 gm. of zinc undecylenate. The amount of zinc undecylenate is not less than 85.0 nor more than 115.0% of the labeled amount.

5-Chlorosalicylanilide.—$C_{13}H_{10}ClNO_2$.—M.W. 247.68.—The structural formula of 5-chlorosalicylanilide may be represented as follows:



Physical Properties: 5-Chlorosalicylanilide is a white, odorless, crystalline solid, m.p. 210-213°. It is soluble in alkalis, but only very slightly soluble in acids. The approximate amounts that dissolve at 25° in the following

solvents to form 100 ml. of solution are: 2 gm. in acetone, 0.4 gm. in alcohol, and 7 gm. in ether. 5-Chlorosalicylanilide is fairly stable to heat, light, and moisture.

Identity Tests: Dissolve about 50 mg. of 5-chlorosalicylanilide in 10 ml. of alcohol with the aid of a little heat and add 3 drops of ferric chloride T.S.: a violet color develops *(presence of a phenol)*.

Place in a test tube about 0.25 gm. of 5-chlorosalicylanilide, 1.5 ml. of pyridine, and 0.25 gm. of benzoyl chloride. Allow to stand a few minutes at room temperature, heat on a steam bath for 3 min., and pour into 5 ml. of water. Finally allow the tube to stand in a refrigerator until crystallization is complete. Filter the mixture, wash the precipitate with 10 ml. of sodium carbonate T.S., recrystallize from ethyl alcohol, and dry the crystals in a vacuum over phosphorus pentoxide for three hours: the purified crystals melt at 170-172°.

A 0.001% solution, prepared as directed in the spectrophotometric assay for 5-chlorosalicylanilide, exhibits an ultraviolet absorption maximum at 276 mμ [specific absorbancy, E(1%, 1 cm.), about 452], a minimum at about 249 mμ, and inflection points at 267, 294, and 313 mμ.

Purity Tests: Dry about 1 gm. of 5-chlorosalicylanilide, accurately weighed, at 105° for four hours: the loss in weight does not exceed 0.1%.

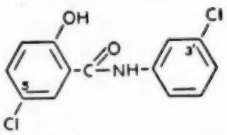
Char about 1 gm. of 5-chlorosalicylanilide, accurately weighed; cool the residue, add 1 ml. of sulfuric acid, heat cautiously until evolution of sulfur trioxide ceases, ignite, cool, and weigh: the residue does not exceed 0.05%. Save the residue for determination of heavy metals.

Dissolve the residue from the ash determination in 23 ml. of water, add 2 ml. of diluted acetic acid, and run a *U. S. P. heavy metals test:* the amount of heavy metals does not exceed 20 ppm.

Assay: (5-Chlorosalicylanilide) Prepare a 0.001% solution of 5-chlorosalicylanilide as follows. Transfer to a 100 ml. volumetric flask 0.1 gm. of 5-chlorosalicylanilide, accurately weighed; fill to the mark with alcohol, and mix. Transfer to a second 100 ml. volumetric flask 10 ml. of this solution, fill to the mark with alcohol, and mix. Transfer to a third 100 ml. volumetric flask 10 ml. of this solution, fill to the mark with alcohol, and mix. Spectrophotometrically determine the absorbancy in a 1 cm. quartz cell at 276 mμ, using alcohol as a blank. The concentration of 5-chlorosalicylanilide in the solution in mg./ml. = absorbancy ÷ 45.2. The amount of 5-chlorosalicylanilide is not less than 95.0 nor more than 105.0%.

(Nitrogen) Transfer to a semimicro Kjeldahl flask about 50 mg. of 5-chlorosalicylanilide, accurately weighed, and digest it for four hours with 7 ml. of sulfuric acid, 2.7 gm. of potassium sulfate, and 0.3 gm. of mercuric oxide. Cool the flask, add 15 ml. of water, cool it again, connect it to an ammonia-distillation apparatus, and add 30 ml. of 40% sodium hydroxide and 10 ml. of 40% sodium thiosulfate. Distil the ammonia into 20 ml. of 4% boric acid. Using a mixed indicator (1:5 methyl red T.S. and bromocresol green T.S.), titrate the solution with 0.05 *N* sulfuric acid. Each milliliter of 0.05 *N* acid is equivalent to 0.0007004 gm. of nitrogen and 0.01238 gm. of 5-chlorosalicylanilide. The amount of nitrogen is not less than 5.52 nor more than 5.80%, equivalent to not less than 97.5 nor more than 102.5% of 5-chlorosalicylanilide.

5,3′-Dichlorosalicylanilide.—$C_{13}H_9Cl_2NO_2$.—M.W. 282.12.—The structural formula of 5,3′-dichlorosalicylanilide may be represented as follows:



Physical Properties: 5,3′-Dichlorosalicylanilide is a white, odorless powder, m.p. 218-221°. It is soluble in alkalis, but only very slightly soluble in acids. The approximate amounts that dissolve at 25° in the following solvents to form 100 ml. of solution are: 3 gm. in acetone, 0.3 gm. in alcohol, and 1 gm. in ether. 5,3′-Dichlorosalicylanilide is fairly stable to heat, light, and moisture.

Identity Tests: Dissolve about 50 mg. of 5,3′-dichlorosalicylanilide in 10 ml. of alcohol with the aid of a little heat and add three drops of ferric chloride T.S.: a violet color develops *(presence of a phenol)*.

Place in a test tube about 0.25 gm. of 5,3′-dichlorosalicylanilide, 1.5 ml. of pyridine, and 0.25 gm. of benzoyl chloride. Allow to stand at room temperature for a few minutes, heat on a steam bath for three minutes, and pour into 5 ml. of water. Finally allow the mixture to stand in a refrigerator until crystallization is complete. Filter the mixture, wash the precipitate with 10 ml. of sodium carbonate T.S., recrystallize from alcohol, and dry the crystals in a vacuum over phosphorus pentoxide for three hours: the purified crystals melt at 163-165°.

A 0.001% solution, prepared as directed in the spectrophotometric assay for 5,3′-dichlorosalicylanilide, exhibits an ultraviolet absorption maximum at 275 mμ [specific absorbancy, E(1%, 1 cm.), about 441], a minimum at about 248 mμ, and inflection points at 267, 294, and 313 mμ.

Purity Tests: Dry about 1 gm. of 5,3′-dichlorosalicylanilide, accurately weighed, at 105° for 4 hours: the loss in weight does not exceed 0.1%.

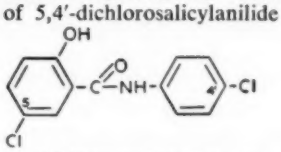
Char about 1 gm. of 5,3′-dichlorosalicylanilide, accurately weighed, cool the residue, add 1 ml. of sulfuric acid, heat cautiously until the evolution of sulfur trioxide ceases, ignite, cool, and weigh: the residue does not exceed 0.05%. Save the residue for determination of heavy metals.

Dissolve the residue from the ash determination in 23 ml. of water, add 2 ml. of diluted acetic acid, and run a *U. S. P. heavy metals test;* the amount of heavy metals does not exceed 20 ppm.

Assay: (5,3′-Dichlorosalicylanilide) Prepare a 0.001% solution of 5,3′-dichlorosalicylanilide as follows. Transfer to a 100 ml. volumetric flask 0.1 gm. of 5,3′-dichlorosalicylanilide, accurately weighed; fill to the mark with alcohol, and mix. Transfer to a second 100 ml. volumetric flask 10 ml. of this solution, fill to the mark with alcohol, and mix. Transfer to a third 100 ml. volumetric flask 10 ml. of this solution, fill to the mark with alcohol, and mix. Spectrophotometrically determine the absorbancy in a 1 cm. quartz cell at 275 mμ, using alcohol as a blank. The concentration of 5,3′-dichlorosalicylanilide in solution in mg./ml. = absorbancy ÷ 44.1. The amount of 5,3′-dichlorosalicylanilide is not less than 95.0 nor more than 105.0%.

(Nitrogen) Tranfer to a semimicro Kjeldahl flask about 0.1 gm. of 5,3′-dichlorosalicylanilide, accurately weighed, and digest it for four hours with 7 ml. of sulfuric acid, 2.7 gm. of potassium sulfate, and 0.3 gm. of mercuric oxide. Cool the flask, add 15 ml. of water, cool it again, connect it to an ammonia-distillation apparatus, and add 30 ml. of 40% sodium hydroxide and 10 ml. of 40% sodium thiosulfate. Distil the ammonia into 20 ml. of 4% boric acid. Using a mixed indicator (1:5 methyl red T.S. and bromocresol green T.S.), titrate the solution with 0.05 *N* sulfuric acid. Each milliliter of 0.05 *N* acid is equivalent to 0.0007004 gm. of nitrogen and 0.01411 gm. of 5,3′-dichlorosalicylanilide. The amount of nitrogen is not less than 4.82 nor more than 5.11%, equivalent to not less than 97.0 nor more than 103.0% of 5,3′-dichlorosalicylanilide.

5,4′-Dichlorosalicylanilide.—$C_{13}H_9Cl_2NO_2$.—M.W. 282.12.—The structural formula of 5,4′-dichlorosalicylanilide may be represented as follows:



Physical Properties: 5,4′-Dichlorosalicylanilide is a white, odorless, crystalline material, m.p. 224-227°. It is soluble in alkalis, but only very slightly soluble in acids. The approximate amounts that dissolve at 25° in the following solvents to form 100 ml. of solution are: 2 gm. in acetone, 0.4 gm. in alcohol, and 0.7 gm. in ether. 5,4′-Dichlorosalicylanilide is fairly stable to heat, light, and moisture.

Identity Tests: Dissolve about 50 mg. of 5,4′-dichlorosalicylanilide in 10 ml. of alcohol with the aid of a little heat and add 3 drops of ferric chloride T.S.: a violet color develops *(presence of a phenol)*.

Place in a test tube about 0.25 gm. of 5,4′-dichlorosalicylanilide, 1.5 ml. of pyridine, and 0.25 gm. of benzoyl chloride. Allow to stand at room temperature for a few minutes, heat on a steam bath for three minutes, and pour into 5 ml. of water. Finally allow the mixture to stand in a refrigerator until crystallization is complete. Filter the mixture, wash the precipitate with 10 ml. of sodium carbonate T.S., recrystallize from alcohol, and dry the crystals in a vacuum over phosphorus pentoxide for three hours: the purified crystals melt at 196-198°.

A 0.001% solution, prepared as directed in the spectrophotometric assay for 5,4′-dichlorosalicylanilide, exhibits an ultraviolet maximum at 277 mμ [specific absorbancy, E(1%, 1 cm.), about 490], a minimum at about 249 mμ , and an inflection point at about 313 mμ.

Purity Tests: Dry about 1 gm. of 5,4′-dichlorosalicylanilide, accurately weighed, at 105° for four hours: the loss in weight does not exceed 0.1%.

Char about 1 gm. of 5,4′-dichlorosalicylanilide, accurately weighed; cool the residue, add 1 ml. of sulfuric acid, heat cautiously until the evolution of sulfur trioxide ceases, ignite, cool, and weigh: the residue does not exceed 0.05%. Save the residue for determination of heavy metals.

Dissolve the residue from the ash determination in 23 ml. of water, add 2 ml. of diluted acetic acid, and run a *U. S. P. heavy metals test:* the amount of heavy metals does not exceed 20 ppm.

Assay: (5,4′-dichlorosalicylanilide) Prepare a 0.001% solution of 5,4′-dichlorosalicylanilide as follows. Transfer to a 100 ml. volumetric flask 0.1 gm. of 5,4′-dichlorosalicylanilide, accurately weighed, fill to the mark with alcohol, and mix. Transfer to a second 100 ml. volumetric flask 10 ml. of this solution, fill to the mark with alcohol, and mix. Transfer to a third 100 ml. volumetric flask 10 ml. of this solution, fill to the mark with alcohol, and mix. Spectrophotometrically determine the absorbancy in a 1 cm. quartz cell at 277 mμ, using alcohol as a blank. The concentration of 5,4′-dichlorosalicylanilide in the solution in mg./ml. = absorbancy ÷ 49.0. The amount of 5,4′-dichlorosalicylanilide is not less than 95.0 nor more than 105.0%.

(Nitrogen) Tranfer to a semimicro Kjeldahl flask about 0.05 gm. of 5,4′-dichlorosalicylanilide, accurately weighed, and digest it for 4 hours with 7 ml. of sulfuric acid, 2.7 gm. of potassium sulfate, and 0.3 gm. of mercuric oxide. Cool the flask, add 15 ml. of water, cool it again, connect it to an ammonia-distillation apparatus, and add 30 ml. of 40% sodium hydroxide and 10 ml. of 40% sodium thiosulfate. Distil the ammonia into 20 ml. of 4% boric acid. Using a mixed indicator (1:5 methyl red T.S. and bromocresol green T.S.), titrate the solution with 0.05 *N* sulfuric acid. Each milliliter of 0.05 *N* acid is equivalent to 0.0007004 gm. of nitrogen and 0.01411 gm. of 5,4′-dichlorosalicylanilide. The amount of nitrogen is not less than 4.82 nor more than 5.11%, equivalent to not less than 97.0 nor more than 103.0% of 5,4′-dichlorosalicylanilide.

Wallace & Tiernan, Inc., Belleville, N. J.

Ointment Salundek (New): 28.3 gm. tubes and 454 gm. jars. An ointment containing 0.1 gm. of zinc undecylenate, 30 mg. of salicylanilide, 20 mg. of 5-chlorosalicylanilide, 20 mg. of undecylenic acid, 10 mg. of 5,3′-dichlorosalicylanilide, and 10 mg. of 5,4′-dichlorosalicylanilide in each gram. U. S. trademark 572,472.

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MEDICAL EXPERT TESTIMONY

Although there are earlier references, both historical and biblical, to the utilization of medical knowledge in relation to public health and to legal matters, the definitive connection between law and medicine may perhaps be dated from the publication of the Codes of Justinian, about 530 A. D. These contained provisions requiring expression of medical opinion in certain legal cases. Between 1500 and 1525, almost all of the principalities and other subdivisions of Central Europe adopted laws requiring the utilization of physicians when their investigations could be helpful to the court in cases of violent death, personal injury, pretended pregnancy, etc.

Today, justice is dependent to some extent on medical evidence in about half the cases brought to appellate courts in the United States. Every trial is an adversary procedure. One party wins, another loses. In theory, in all actions, it is the truth that is sought. It is obvious that neither court nor jury is in a position, unaided, to resolve medical problems, to evaluate, intelligently, causal relationships or effects. The medical expert witness has the opportunity and the privilege to aid the court and jury in arriving at the truth. It is his function to assist in the administration of justice.

Opinion evidence, as a whole, is not looked on with great favor by the law. It is probable that juries are more prone to distrust the testimony of the medical expert witness than the testimony of any other witness. Laymen find it difficult to understand how honest physicians may express contradictory opinions. Jurors do not at times seem to attach any higher credibility to the testimony of physicians of high standing than to that given by the "professional" expert witness.

The attitude of the courts is well reflected in a case [1] in which the court said that it is much to be regretted that the learned members of the medical profession so often radically differ on subjects with respect to which they are supposed to have special knowledge; that such differences of opinion are not an unusual occurrence in the trial of a lawsuit, but rather constitute the rule; that it is not intended to criticize or to cast a slur on the medical profession—the object being to bring home a realization that court proceedings are designed for the general welfare in order that justice may be done between man and man; and that mutual cooperation on the part of the medical profession to obviate as far as possible a situation that appears to the mind of a layman to be irreconcilable is highly to be desired. In another case,[2] the supreme court of Pennsylvania said that one of the evils of the trial of personal injury cases is padding the claim with evidence of the professional medical expert.

With the motive of constructively influencing medical expert testimony generally, of inducing experts to give only fair and honest testimony, avoiding statements of alleged opinion contrary to the whole body of medical knowledge and opinion, and of avoiding declarations that obviously they would not dare to make, or attempt to justify, before medical groups, the Minnesota Plan was developed.

The Minnesota Plan considers that judges, lawyers, and physicians will be asked to call to the attention of appropriate committees of the medical and bar associations any conscious deviations from the truth that they may observe in the testimony of expert witnesses and that the transcript of the evidence will be submitted to an impartial group of doctors. Unfortunately, there is no effective machinery by which the culprit may be dealt with. And there is a great basic difficulty, that of establishing that what a person declares as his opinion is, in fact, created and expressed for the particular occasion and circumstance.

It has been said [3] that the use of medical expert witnesses on an adversary basis is immoral and corrupting and that an ethical standard should be established whereunder the expert, the psychiatrist specifically, may not appear on the call of either party but only as a friend of the court. These suggestions are deserving of serious consideration. The proposal could be effectuated by developing panels of potential experts. Upon application of the parties a list of experts would be supplied. Each party might have the right of a number of peremptory challenges, somewhat analogous to the right of peremptory challenge of potential jurors. Finally, there would remain a predetermined number of experts, three or five, who would examine the claimant, study the available medical records, and thereafter be available for examination in court, including cross examination by all parties.

Although medicine is not an exact science and although it is the opinion of the expert witness that is generally of primary importance, it is believed that in most instances a panel of impartial medical experts would be able to find basic agreement and that their conclusions would reflect the truth that the court and the jury seek.

1. Kramer v. Chicago & M. E. R. Co., 179 Wis. 453.
2. Murphy v. Pa. R. R. Co. (Pa.), 140 Atl. 867.
3. Zilboorg, G.: The Psychology of the Criminal Act and Punishment, New York, Harcourt, Brace and Company, Inc., 1954.

YOUR DIRECTORY INFORMATION CARD

The new edition of the American Medical Directory, the 19th, is now in galley proof, and it is expected that the book will be ready for delivery late in 1955. The previous edition was issued in 1950. Since that time, it has not been possible to publish a new edition, because changes in the membership structure of the American Medical Association made it difficult to obtain an accurate list of members. Within the next few weeks, a directory information card will have been mailed to every physician in the United States, its dependencies, and

Canada, requesting information to be used in compiling the new directory. Physicians receiving an information card should fill it out and return it promptly regardless of whether any change has occurred in any of the points on which information is requested. It is urged that physicians also fill out the right half of the card, which section requests information to be used exclusively for statistical purposes. Even if a physician has sent in similar information recently, he should mail the card promptly to the Directory Department of the American Medical Association to insure an accurate listing of his name and address. There is no charge for publishing the data nor are physicians obligated in any way.

The directory is one of the most important contributions of the American Medical Association to the work of the medical profession in the United States. In it, one may find dependable data concerning physicians, hospitals, medical organizations, and activities. It provides full information on medical schools, specialization in the fields of medical practice, memberships in special medical societies, tabulation of medical journals and libraries, and statistics on the distribution of physicians and hospitals in the United States.

RESEARCH IN PATHOLOGY

The acute nationwide shortage of pathologists, and especially of persons trained for research in this important branch of medical science, recently led to the adoption of a plan of action to relieve this situation. At a symposium held in Washington under the sponsorship of the study section in pathology of the United States Public Health Service the causes of this shortage were examined and recommendations were made for its alleviation.[1] Although it appears that many factors have contributed to the situation, not all of which are readily correctable, it was agreed that certain steps should be undertaken immediately to recruit additional workers in the field. Perhaps the first of these is to stress the indispensability of the pathologist in the investigation of most problems relating to the cause and nature of disease.

Feldman has defined the academic pathologist as "one possessing competent knowledge of the structural, chemical, and functional alterations incident or significantly related to the pathogenesis of disease under natural and experimental conditions, who by morphologic, chemical, microbiologic, serologic, or any other type of laboratory procedure or examination, seeks and correlates new facts for the advancement of the medical sciences." The single attribute of the research pathologist that distinguishes him from workers in other fields of medical research is his ability to recognize and interpret structural changes. Obviously the recognition of structural change is not an end unto itself but must be associated with the related functional, chemical, microbiological, or serologic changes.

If more workers are to be recruited to the field of research pathology there must be more widespread recognition of the opportunities that are inherent to this special field of medical science. More students of medical science must realize that the ultimate answer to a host of important problems will require the investigator to possess expert knowledge of structure and the ability to interpret the significance of structural changes. Only when this fact is more widely recognized than is apparently now the case will the major obstacle to the recruitment of research pathologists be overcome.

THE A. M. A. AND FEDERAL LEGISLATION

Trouble, tragedy, and dissension are the major ingredients in the news today. Little attention is given to activities involving progress and agreement. Health legislation provides a good illustration of that point. During the past year or more the American public has become aware of the fact that the American Medical Association opposed the federal reinsurance proposal, disapproved of two provisions in the Social Security Act amendments, and disagreed with the government policy on medical care for veterans with non-service-connected disabilities. Unfortunately, however, the public is not equally aware that during that same period of time the A. M. A. was giving active support to a large number of constructive legislative proposals involving medicine and health. We believe, therefore, that some long-overdue attention should be paid to the positive side of the record.

That record shows that the A. M. A. supported 11 of the 15 major medical bills that were enacted into law by the 83rd Congress. The Association opposed only 2 of the 15, and took no stand on the other 2. The 11 proposals that the A. M. A. favored and which became public law were as follows:

Expansion of the Hill-Burton Hospital Construction Act to help finance the building of new nonprofit health facilities

Extension of the regular Hill-Burton act to 1960

Lowering of the medical expense tax deduction from 5% to 3%

Extension of the "Doctor-Draft" law to 1955

Establishment of the Department of Health, Education, and Welfare

Establishment of the Hoover Commission on Organization of the Executive Branch of the Government

Establishment of the Commission on Intergovernmental Relations

Transfer of the Indian hospital and medical service from the Department of the Interior to the Public Health Service

Ban against the shipment of fireworks into states where their sale is illegal

A federal charter for the National Fund for Medical Education

Permission for oral narcotic prescriptions under certain conditions and limitations

In addition to those 11 measures, the A. M. A. also supported 2 major proposals that were not acted on by the 83rd Congress. These were the administration bill to streamline Public Health Service grants to the states and the Jenkins-Keogh bills to stimulate the establishment of private pension plans by self-employed persons and by employees not covered by company plans.

We may be indulging in a bit of wishful thinking, but it would be helpful if the American people had more knowledge of the fact that the A. M. A. every year supports constructive legislation. The positive side of the story may not have blood-and-thunder news interest, but it spells out steady, continued progress in protecting the public health and welfare.

1. Symposium on Increasing the Research Potential in Pathology, Lab. Invest. 3: 379-450 (Sept.-Oct.) 1954.

ORGANIZATION SECTION

THIRD BITUMINOUS COAL CONFERENCE

Continued progress and cooperation between the medical profession and the United Mine Workers of America in providing better medical care in coal mining areas was reported at the third Conference on Medical Care in the Bituminous Coal Mine Areas held recently at Huntington, W. Va. The two-day conference, sponsored by the Committee on Medical Care for Industrial Workers of the American Medical Association, was attended by more than 80 representatives of the A. M. A., the United Mine Workers Welfare and Retirement Fund, and the state medical societies of Kentucky, Pennsylvania, Tennessee, Virginia, and West Virginia.

There was general agreement on the need for increased activity to recruit more well-qualified physicians in the coal mining areas, find ways and means to prevent the overuse of hospital facilities, develop closer liaison on the local level between physicians and the U. M. W. A., establish health educational programs for the miners, and make better use of general practitioners in the U. M. W. A. medical program.

Dr. Warren Draper of Washington, D. C., executive medical officer of the U. M. W. A. Welfare and Retirement Fund, assured the conference that the miners' medical care program will be conducted according to the accepted ethics and standards of the medical profession, including free choice of qualified physicians and hospitals. Dr. Draper said that the annual conferences "have been of inestimable value to the U. M. W. A.," and he reported that the mine workers union is "extremely proud of its relationship with the American Medical Association and the state medical societies." Dr. Draper and other representatives of the U. M. W. A. also told the conference that the 10 hospitals now under construction by the union will be available for use by all members of the communities where they are located and will be staffed as far as possible by qualified specialists and general practitioners who already are in those areas.

PRESIDENT EISENHOWER RECEIVES LAHEY AWARD

In a ceremony at the White House on Nov. 16, President Eisenhower received the Frank H. Lahey Memorial award for his outstanding leadership in medical education. The three-and-a-half inch bronze medal was presented to the President by S. Sloan Colt, New York, president of the National Fund for Medical Education. Witnessing the ceremony was President Walter B. Martin, representing the A. M. A., and representatives of the National Fund for Medical Education and Association of American Medical Colleges. Mrs. Lahey was also present.

This was the first time that the award had been given. The three organizations sponsored the award in memory of Dr. Lahey, who was president of the A. M. A. in 1941 and who worked untiringly to help the nation's medical schools financially and without government subsidy. President Eisenhower was elected to receive the award because, as one of the founders of the National Fund for Medical Education, he recognized the importance of keeping medical education free, progressive, and solvent so the medical schools could continue to nourish medical practice and research unhampered by curtailment of programs and uncompromised by government subsidy.

COUNTY MEDICAL PR MANUAL

A new Public Relations Manual for county medical PR chairmen is off the press and will be mailed to state medical societies shortly. The manual will be made available to the county societies only through the office of the state medical society. The indexed manual, a complete PR primer, reports what other societies have done and tells the PR chairman what his own society can do and how to do it.

Studies by the A. M. A. have revealed eight basic PR programs that, if put into operation, will woo the understanding and confidence of the public. Spelled out in the manual is the organization and promotion of emergency call systems, mediation committees, press relations, speakers' bureaus, society member indoctrination, provision of medical care for all, public service activities, and citizenship activities. If a county society has already made a going enterprise of this "basic eight" plan, the manual can stimulate and reinforce the society's activities with its many ideas, suggestions, and supplementary projects.

MARCH OF MEDICINE PROGRAM

The second program in the current March of Medicine series will be seen at 5:30 p. m., EST on Sunday, Dec. 5, over 60 stations of the NBC television network. Presented by Smith, Kline and French Laboratories, in cooperation with the A. M. A., the program tells the story behind one of the scientific exhibits at the A. M. A. Clinical Meeting in Miami, Nov. 30 to Dec. 2. This exhibit reported a surgical procedure for a diseased aorta that was developed by Dr. Michael E. DeBakey, head of the department of surgery, and associates at Baylor University.

BERMUDA-NASSAU CRUISE FOLLOWING NEXT ANNUAL MEETING

The American Medical Association has completed arrangements for a Bermuda-Nassau cruise for physicians and their wives after the A. M. A. convention at Atlantic City, next June 6-10. The party will sail from New York City at 7:00 p. m., Friday, June 10, on the Ocean Monarch, a palatial steamer designed primarily for cruising. This ship has a swimming pool and beautiful public rooms, and all staterooms are outside rooms. The first port of call will be St. George's, Bermuda, where there will be a motor sightseeing trip, a visit to the Castle Harbour hotel for high tea, a shopping expedition, and time for individual plans. The second port of call will be Nassau in the Bahamas. Here, too, a sightseeing trip is part of the shore excursion, and there will be guest bathing privileges at either the regal British Colonial's salt air pool or private beaches. A dinner dance at the Continental Room of the British Colonial will bring the Nassau visit to a close. The entire cruise requires but eight days, with the Ocean Monarch returning to New York at 9:00 a. m. on Saturday, June 18. While the choice space on the Ocean Monarch is being held for the American Medical Association, the Furness Lines suggest that reservations be made immediately.

The trip is being handled by W. M. Moloney, general agent for the C., B. & Q. Railroad, who supervised the A. M. A. trip to Hawaii that followed the San Francisco meeting last June and from whom reservation blanks may be obtained at the Chicago, Burlington and Quincy Railroad, Bankers Building, 105 West Adams Street, Chicago. For those who prefer a longer trip after the Atlantic City meeting, the A. M. A., in conjunction with United Air Lines, has arranged a tour to Europe. The announcement of this trip, covering seven countries, was carried in THE JOURNAL, Oct. 30, 1954, page 896.

NEW TELEVISION SHOW BEGINS DEC. 12

A new weekly medical television show, presented in cooperation with the American Medical Association, will be seen on 16 stations of the ABC-TV network at 9:15 p. m. (EST) each Sunday, beginning Dec. 12. The 15-minute program will be sponsored by Ciba and will feature Dr. Louis H. Bauer, Past-President of the A. M. A. and secretary-general of the World Medical Association, as host-commentator. Subject of the inaugural telecast is tuberculosis. The cities and stations that will carry this presentation are Atlanta, Ga., WLW-A; Baltimore, WAAM; Chicago, WBKB; Cincinnati, WCOP-TV; Cleveland, WXEL; Dallas, Texas, WFAA-TV; Detroit, WXYZ-TV; Kansas City, Mo., KCMO-TV; Milwaukee, WTVW; Minneapolis, WTCN-TV; Nashville, Tenn., WSIX-TV; New York, WABC-TV; Philadelphia, WFIL-TV; Washington, D. C., WMAL-TV. Los Angeles, KABC, and San Francisco, KGO-TV, will use a delayed kinescope of the show.

MEDICAL NEWS

CALIFORNIA

Postgraduate Conference in Ophthalmology.—Stanford University School of Medicine, San Francisco, will present the annual postgraduate conference in ophthalmology March 21 to 25, 1955. Registration will be open to physicians who limit their practice to the treatment of diseases of the eye or of the eye, ear, nose, and throat. To allow free discussion by members of the conference, registration will be limited to 30 physicians. Instructors will be Drs. A. Edward Maumenee, Dohrmann K. Pischel, Jerome W. Bettman, Max Fine, Earle H. McBain, and Arthur J. Jampolsky. Programs and information may be obtained from the Office of the Dean, Stanford University School of Medicine, 2398 Sacramento St., San Francisco 15.

COLORADO

General Practice Review.—A postgraduate course, "General Practice Review," at the University of Colorado Medical Center, Denver, Jan. 17 to 22, 1955, will present full-day programs on medicine, pediatrics, surgery, anesthesiology, obstetrics and gynecology, and trauma. Since the course will be held during the week of the Western National Stock Show, reservations will be made for evening performances for registrants desiring to attend this event. Hotel and motel reservations will be made before Dec. 20 through the Office of Graduate and Postgraduate Medical Education, University of Colorado Medical Center, 4200 E. Ninth Ave., Denver 20, which will also supply a program and complete information.

CONNECTICUT

Hospital News.—In its guest speaker program, Saturdays at 11 a. m. in the amphitheater, the Hartford Hospital presents Dr. John R. Brooks, instructor in surgery, Harvard Medical School, Boston, Dec. 4 (Postoperative Pancreatitis); Dr. Averill A. Liebow, professor of pathology and clinical pathologist, Yale University School of Medicine, New Haven, Dec. 11 (Clinical Pathological Conference); and Dr. Irving A. Beck, Providence, R. I., Dec. 18 (Interstitial Pneumonia with Eosinophilia).

DELAWARE

General Practitioners Meet in Wilmington.—The Delaware Academy of General Practice will hold its annual meeting Dec. 10 and 11 at the Kent Manor Inn, DuPont Parkway, Wilmington. The scientific program, which will be given Saturday, will include the following presentations:

Dominic A. Donio, Allentown, Pa.: Physical Medicine in General Practice.
Gustav J. Martin, Sc.D., Philadelphia: Trypsin: Pharmacology and Physiology of the Drug.
Joseph M. Hopen, Philadelphia: Trypsin: Clinical Uses.
Lowell A. Erf, Philadelphia: Hypertension and Hypotension—Etiology and Treatment.
Peter J. Warter, Trenton, N. J.: Diagnosis and Treatment of Rheumatoid Arthritis.
Charles E. Brambel, Baltimore: Anticoagulants: Clinical Applications.
Mr. James E. Bryan, Summit, N. J.: Medical Economics.

The main speaker at the banquet, Saturday, 7 p. m., at the Brandywine Country Club, Concord Pike, Wilmington, will be Dr. William B. Hildebrand, Menasha, Wis., president, American Academy of General Practice.

FLORIDA

Annual Geriatric Seminar.—The Manasota Medical Foundation and the Sarasota and Manatee County medical societies will present the revived annual seminar, Dec. 6 to 10, at the Orange Blossom Hotel, Sarasota. The material will emphasize geriatric problems. A panel from the Mayo Foundation, Rochester, Minn., consisting of Drs. Thomas J. Dry, John W. Kirklin, William G. Sauer, and Oliver H. Beahrs, will conduct the seminar (approved for credit for postgraduate study by the American Academy of General Practice). Sessions will begin at 7:30 p. m., Friday evening being reserved for round-table discussions.

Personal.—Dr. Dewitt C. Daughtry, Miami, recently returned from South America, where he represented the American College of Chest Physicians at the inaugural ceremonies of a chest disease hospital in Santiago, Chile. Dr. Daughtry lectured and took part in conferences on cardiac surgery and other thoracic diseases and on the return trip participated in other medical activities in Lima, Peru, and in Panama.——Dr. Carlos A. P. Lamar, Miami, addressed the first annual meeting of the Cuban Endocrine Society, Matanzos, Cuba, Oct. 16, with "A New Interpretation of the Roles of Sugars, Proteins, and Fats in the Physiopathology and in the Control of Diabetes Mellitus."

Seminar in Ophthalmology and Otolaryngology.—The ninth annual University of Florida Midwinter Seminar in Ophthalmology and Otolaryngology will be held at the Sans Souci Hotel, Miami Beach, the week of Jan. 17, 1955. The lectures on ophthalmology will be presented Jan. 17 to 19 and those on otolaryngology, Jan. 20 to 22. All registrants are invited to the midwinter convention of the Florida Society of Ophthalmology and Otolaryngology, Wednesday afternoon. Registrants and their wives may also attend the informal banquet at 8 p. m. Wednesday. The seminar lecturers on ophthalmology will be Drs. William F. Hughes Jr., Chicago; Phillips Thygeson, San Jose, Calif.; James H. Allen, New Orleans; Walter H. Fink, Minneapolis; and Milton L. Berliner, New York. Those lecturing on otolaryngology include Drs. Paul H. Holinger, Chicago; Lawrence R. Boies, Minneapolis; Edmund P. Fowler Jr., New York; Arthur W. Proetz, St. Louis; and David D. DeWeese, Portland, Ore.

ILLINOIS

Psychiatric Lectures.—The next offering of the series on treatment in psychiatry at the North Shore Health Resort (225 Sheridan Rd., Winnetka) will be "The Relationship Between the Physician, the Patient, and His Family," which will be presented Jan. 5, 1955, by Dr. Fritz Kant, professor of neuropsychiatry, University of Wisconsin Medical School, Madison.

Chicago

Cardiac Conference.—The monthly clinicopathological cardiac conference of Cook County Hospital will be held Dec. 10 from 11 a. m. to 12 noon in the Children's Amphitheater, 700 S. Wood St. The guest speaker, Dr. Albert Dorfman, associate professor of pediatrics, University of Chicago School of Medicine, and director of research, La Rabida Jackson Park Sanitarium, will discuss "Studies on the Therapy of Rheumatic Fever." Physicians are invited.

Course in Electrocardiographic Interpretation.—A course in electrocardiographic interpretation for graduate physicians will be given at the Michael Reese Hospital by Dr. Louis N. Katz and associates. The class will meet each Wednesday from 7 to 9 p. m. for 12 weeks, beginning Feb. 2, 1955. Information and a copy of the lecture schedule may be obtained from Mrs. Ana Rose, Administrative Secretary, Cardiovascular Department, Medical Research Institute, Michael Reese Hospital, Chicago 16.

MICHIGAN

Society News.—Dr. Harry A. Oberhelman, Chicago, will address the Wayne County Medical Society, Detroit, on breast tumors, Dec. 6 at 8:30 p. m. at the Wayne University Medical School auditorium.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education, and public health. Programs should be received at least three weeks before the date of meeting.

MISSOURI

Art and Hobby Show.—The St. Louis Medical Society's art and hobby show will continue (9 a. m. to 5 p. m. Monday through Friday and 9 a. m. to 12 noon Saturdays) throughout December in the Bartscher Room, second floor of the St. Louis Medical Society Building, 3839 Lindell Blvd.

University News.—Dr. Eugene T. Standley of Columbia University College of Physicians and Surgeons, New York, has been appointed assistant professor of pathology at the University of Missouri School of Medicine, Columbia. Dr. Standley was instructor in pathology at Columbia and assistant pathologist at the Presbyterian Hospital, New York. He served for two years at the U. S. Naval Hospital, Portsmouth, Va., as laboratory officer and instructor in the Laboratory Technician School. In 1950-1951 he was with the Barnes Hospital in St. Louis as personnel physician and executive assistant in hospital administration.

NEW JERSEY

General Practitioners Meet in Newark.—The New Jersey Academy of General Practice will hold its third annual scientific assembly at the Hotel Essex House, Newark, Dec. 8. The program will include:

Newer Concepts in the Management of Obstetrical and Gynecological Problems, Alan F. Guttmacher, New York.
Genital Tumors, Herbert F. Newman, New York.
Gynecologic Procedures That Can Be Carried Out in the Office of the General Practitioner, Walter J. Reich, Chicago.
Developments in Gynecologic Endocrinology Stressing the Treatment of Borderline Hermaphroditism, Robert B. Greenblatt, Augusta, Ga.

Tumor Seminar.—The New Jersey Society of Clinical Pathologists will hold its fourth annual slide seminar on unusual tumors at 2 p. m., Dec. 11, in the Nurses' Auditorium of Presbyterian Hospital, Newark. Drs. Fred W. Stewart and Frank W. Foote Jr. of the Memorial Center for Cancer and Allied Diseases, New York, will act as moderators. The slides and case histories prepared by the bureau of pathology, New Jersey State Department of Health, are being sent to all members of the New Jersey Society of Pathologists. Voting on the slides will be analyzed by Drs. Stewart and Foote at the meeting. Visitors will be welcome.

Martland Memorial Lecture.—In memory of the late Dr. Harrison S. Martland, who died May 1, the 20th annual Harrison S. Martland lecture will be given at 9 p. m. Dec. 8 in conjunction with a combined meeting of the Essex County Medical Society, the Academy of Medicine of New Jersey, and the Essex County Pathological and Anatomical Society at the Academy of Medicine of New Jersey, 91 Lincoln Park South, Newark. Dr. Fred W. Stewart, pathologist to the Memorial Center for Cancer and Allied Diseases, New York, will discuss "Osteogenic Sarcoma Caused by Therapeutic Irradiation." The lecture will be preceded by the annual dinner at 6:30 p. m. at the Essex House, 1050 Broad St., Newark. The price per person is $5 (dress optional). All members of the medical profession and their guests are invited to the dinner and the lecture. Checks for dinner reservations should be sent to Dr. Royal A. Schaaf, 413 Mt. Prospect Ave., Newark.

NEW YORK

Society News.—Officers of the Brooklyn Dermatological Society for 1954-1955 include: Dr. Harry L. Feigenbaum, president; Dr. Frank D. Jennings, vice-president; and Dr. Benjamin D. Erger, Brooklyn, secretary.——Dr. Philip Thorek, clinical associate professor of surgery, University of Illinois College of Medicine, Chicago, will address the Rochester Academy of Medicine with "The Esophagus and the Practitioner" at 8:30 p. m., Dec. 7, in the academy headquarters, 1441 East Ave., Rochester.

Assembly in Anesthesiology.—The eighth postgraduate assembly in anesthesiology of the New York State Society of Anesthesiologists will be held at the New Yorker Hotel in New York, Dec. 9 to 11. The program includes discussion of psychological aspects of the anesthetic experience; progress in analgesics, hypnotics, and N-allyl normorphine (nalorphine); hypothermia; physiology and pharmacology of cardiac arrhythmia with particular reference to anesthesia; absorption and elimination of anesthetic agents; cardiopulmonary laboratory; anesthesia for infants and children; and the breathing machine. A residents' program has been scheduled for Saturday.

Course on Management of Trauma.—The University of Buffalo School of Medicine will offer a postgraduate course on the management of trauma, Dec. 8 and 9, designed for general practitioners, surgeons, and industrial physicians. The Wednesday program, which will be presented in the south building lecture hall of Buffalo General Hospital, will include discussions on primary management of trauma, thoracic trauma, and head and face injuries. The Thursday program in the main conference room of the Edward J. Meyer Memorial Hospital will deal with trauma of the hand, abdominal trauma, and common fractures. The Wednesday session will open with a film, "First Aid," and the Thursday session with a film, "Introduction to Fractures." A trauma conference, 3:30-5 p. m., will conclude each day's session. The fee for the course is $25. Checks, payable to the University of Buffalo, should be sent with registration form to Dr. Milton Terris, Assistant Dean for Postgraduate Education, University of Buffalo School of Medicine, 3435 Main St., Buffalo 14.

New York City

Tumor Clinic.—Dr. Wilhelm C. Hueper, chief, environmental cancer section, National Cancer Institute, Bethesda, Md., will present "Lung Cancer as an Environmental Hazard" at the tumor clinic conference, Harlem Hospital, Dec. 15, 10:45 a. m.

Schoenberg Lecture.—The eighth annual Mark J. Schoenberg memorial lecture will be delivered Dec. 6, 8 p. m., at the New York Academy of Medicine, under the sponsorship of the National Society for the Prevention of Blindness and the New York Society for Clinical Ophthalmology. Dr. Joseph Igersheimer, consulting ophthalmologist at Boston City Hospital, will discuss the pathology and treatment of optic nerve diseases.

Meeting on Cancer.—The New York Cancer Society will hold its third meeting Dec. 7, 8:30 p. m., in Hosack Hall, New York Academy of Medicine, Fifth Avenue at 103rd Street. Dr. Maurice Lenz, professor of clinical radiology, Columbia University College of Physicians and Surgeons, will serve as moderator for the panel discussion, "Management of Cancer of the Larynx," in which the participants will be Drs. Chevalier L. Jackson, Philadelphia; LeRoy A. Schall and Milford D. Schulz, Boston; and Daniel S. Cunning, Clara L. Okrainetz, and Sidney M. Silverstone, New York. Members of the medical profession and medical students are invited. The fourth meeting of the 1954-1955 season will be held at the New York Academy of Medicine, Jan. 4, 1955.

Thomas Salmon Lectures.—The 22nd series of the Thomas William Salmon lectures will be given by William Alvin Hunt, Ph.D., professor of psychology, Northwestern University, Chicago, at 8:30 p. m. in Hosack Hall of the New York Academy of Medicine, 2 E. 103rd St., as follows: Dec. 6, "What a Clinical Psychologist Is"; Dec. 8, "How the Clinical Psychologist Came to Be"; and Dec. 9, "The Problems and Future of Clinical Psychology." Dr. Hunt is chairman of the department of psychology at Northwestern University. He is the author of many professional articles; is consulting editor of the *Journal of Clinical Psychology*, the *Journal of Consulting Psychology*, and the *Journal of Abnormal and Social Psychology;* and is currently engaged in research on neuropsychiatric selection for the bureau of medicine and surgery of the Department of the Navy.

OHIO

Joint Meeting.—On Dec. 7 the Academy of Medicine of Cincinnati will hold a joint meeting with the Heart Council. "Significance of Abnormal Cardiac Sounds and Murmurs" will be presented by Dr. Howard B. Sprague, clinical associate in medicine, Harvard Medical School, and chief of staff, House of the Good Samaritan, Boston.

Skeet Shooters Wanted.—A team of physicians of the Montgomery County Medical Society, interested in skeet shooting, wishes to contact members of other county medical societies to arrange intersociety matches. Communications should be sent to Dr. Raymond K. Bartholomew, 1120 Fidelity Bldg., Dayton 2 (telephone AD-5161).

PENNSYLVANIA

Society News.—The fifth annual Midwinter Clinical Meeting of the Pennsylvania Academy of Ophthalmology and Otolaryngology will be held at the Eye and Ear Hospital, Pittsburgh, Jan. 19, 1955. Operative clinics and symposiums will be offered, and final arrangements will be made for the 1955 meeting at the Hotel Traymore, Atlantic City, N. J., May 18 to 21.

Philadelphia

Anniversary of Philadelphia General.—The medical staff, the Ex-Residents' Association, and the Nurses' Alumnae Association of the Philadelphia General Hospital, Blockley division, are planning a joint subscription dinner Dec. 7, to commemorate the 225th anniversary of the founding of the Philadelphia General Hospital. There will be a historical exhibit and skits by the Blockley Medical Society. The Hon. Joseph S. Clark Jr., mayor of Philadelphia, will be the guest speaker. On the afternoon preceding the dinner, tours through the hospital are planned especially for alumni of the hospital who may not be aware of the progressive changes at the hospital in the past few years. Those interested should contact Dr. Harold L. Goldburgh, Treasurer of the Medical Board, Executive Offices, Philadelphia General Hospital, 34th Street and Curie Avenue, Philadelphia 4.

Lectures on Psychosomatic Medicine.—The Philadelphia Institute for Education and Research in Psychiatry, an affiliate of the Philadelphia Psychiatric Hospital, offers a Thursday (4 p. m.) series of lectures on psychosomatic medicine for the medical profession at the Philadelphia Psychiatric Hospital, Ford Road and Monument Avenue, Philadelphia 31. On Oct. 28 Dr. Harold G. Wolff, professor of medicine, Cornell University Medical College, New York, discussed "Life Situations, Emotions, and Disease," and on Nov. 11 "Psychosomatic Aspects of Obstetrics and Gynecology" was presented by Dr. William S. Kroger, associate clinical professor of gynecology, Chicago Medical School. On Dec. 9 Dr. Howard A. Rusk, professor and chairman, department of physical medicine and rehabilitation, New York University College of Medicine, will discuss "Emotional Factors in Physical Disability."

TEXAS

Meeting on Rheumatism.—The Texas Rheumatism Association will hold a full day scientific session Dec. 10, under the presidency of Dr. Alfred W. Harris, Dallas. The guest speaker is Dr. Joseph J. Bunim, director, National Institute of Arthritis and Metabolic Diseases, Bethesda, Md.

Postgraduate Conference.—The Temple division of the University of Texas Postgraduate School of Medicine will hold a medical and surgical conference March 7 to 9, 1955. The program, sponsored by the Scott, Sherwood and Brindley Foundation, will be presented in Temple by members of the staff of the Scott and White Clinic. Morning sessions will consist of operative clinics, with consulting internists, radiologists, and pathologists participating; the afternoon sessions will be composed of round-table discussions, panels, symposiums, and clinicopathological conferences. A formal lecture will be presented each evening, with a banquet-lecture on the final night. Registration forms are available from the office of the Assistant Dean, University of Texas Postgraduate School of Medicine, Temple Division, Temple.

Seminar Speakers from Europe.—Dr. Andre Lwoff of the Pasteur Institute, Paris, will be a feature speaker at the University of Texas Medical Branch, Galveston, Dec. 10 at noon in Keiller Hall. His address, "Nutritional and Virus Diseases of Bacteria," will be part of the special seminar series maintained by the department of pediatrics for the benefit of staff, students, and practicing physicians.——Sir Lionel Whitby, vice-chancellor of the University of Cambridge and regius professor of physic, will be the guest of the University of Texas Medical Branch, Galveston, Dec. 13, for a series of conferences and seminars on blood disorders. On that evening Sir Lionel will be the speaker at the Alpha Omega Alpha honorary medical society dinner at Galveston, under the presidency of Dr. F. J. L. Blasingame of Wharton, president of the Texas Medical Association. While in Galveston Sir Lionel, who was president of the first World Conference on Medical Education held in London in 1953, will also discuss various aspects of medical education in different parts of the world.

VIRGINIA

Evening Medical Lectures.—The University of Virginia, Charlottesville, will present "Hearing and Language Disorders in Young Children" by Dr. William G. Hardy, Baltimore, Dec. 6, and "Current Problems in Virology" by Dr. Joseph E. Smadel, Walter Reed Army Medical Center, Washington, D. C., Dec. 13.

Personal.—Dr. R. Sumpter Griffith, 93-year-old physician of Waynesboro, has been honored by the local firemen of the Waynesboro Fire Company, who have given him a plaque as a tribute to his long service. Dr. Griffith is a veteran of the bucket brigade days, having first joined the fire fighting unit in the former Basic City in 1892.——Dr. James L. Hamner, Mannboro, has been elected president of the state board of health, to fill the vacancy caused by the death of Dr. William Tate Graham. Dr. Hamner was recently honored by presentation of the Thomas Gibson Hobbs memorial award of his alma mater, Lynchburg College.

Congress in Ophthalmology and Otolaryngology.—The Gill Memorial Eye, Ear and Throat Hospital in Roanoke will hold its annual congress in ophthalmology and otolaryngology April 4 to 9, 1955. Among the guest speakers are: Dr. Henry L. Birge, Hartford, Conn.; Paul Boeder, Ph.D., Southbridge, Mass.; Dr. William B. Clark, New Orleans; Drs. Daniel M. Gordon, R. Townley Paton, and James E. Purnell, New York; Dr. Anderon C. Hilding, Duluth, Minn.; Dr. Chevalier L. Jackson, Philadelphia; Dr. Bertha A. Klien, Chicago; Dr. Theodore G. Martens, Rochester, Minn.; Dr. Daniel Miller, Boston; Major Gen. Daniel Ogle, Washington, D. C.; Dr. Albert D. Ruedemann, Detroit; Dr. Robert E. Ryan, St. Louis; Dr. Grant E. Ward, Baltimore; and Drs. Thomas F. Paine, Richard Schneider, and John M. Sheldon, Ann Arbor, Mich.

WISCONSIN

Narcotic Violation.—Dr. Alvin J. Dupont, 710 S. Broadway, Green Bay, pleaded guilty to an indictment charging a violation of the federal narcotic law in the U. S. District Court at Milwaukee and on Sept. 13 was fined $500.

Society News.—At its recent annual meeting the John Warton Harris Obstetrical Society elected Dr. E. Russell Muntz, Ada, Okla., president; Dr. William R. Knight III, Houston, Texas, president-elect; and Dr. Alice D. Watts, Milwaukee, secretary-treasurer. The next annual meeting will be held at the State of Wisconsin General Hospital, Madison, Sept. 2 and 3, 1955.——At the annual dinner meeting of the Medical Society of Milwaukee County (Milwaukee Athletic Club, Dec. 9, 6 p. m.) the speakers will be Dr. Nicholas P. Dallis, Toledo, Ohio, creator of the comic strip "Rex Morgan, M.D.," and his artist associates.

Hospital News.—On Oct. 15 the State of Wisconsin General Hospital, Madison, celebrated its 30th anniversary. Award pins and buttons were presented to 25 year and 30 year employees. A dinner was attended by employees and staff of the hospital, as well as by the regents and the president of the University of Wisconsin.——Dr. Harold M. Coon, superintendent of the University Hospitals at the University of Wisconsin, Madison, has been elected to the presidency of the Mississippi Valley Conference on Tuberculosis for the 1954-1955 term. The election took place at the annual meeting of the conference, which was held Oct. 7 and 8 at Kansas City, Kan.

PUERTO RICO

Annual Meeting of Medical Association.—The Puerto Rico Medical Association will hold its 51st annual assembly, Dec. 8 to 12, in its headquarters (Avenida Fernández Juncos-Parada 19, Santurce), with several sessions at various hospitals. The presidential address will be delivered at 8 p. m. Wednesday by Dr. Federico Hernández-Morales, Santurce. Guests of honor and their first presentations include:

Possibilities of Endocrine Therapy in Gynecology and Obstetrics, Carlos D. Guerrero, Mexico, D. F.
Experience with Subtotal Gastrectomy in Peptic Ulcer, Henry L. Bockus, Philadelphia.
Present Status of Surgery for Cardiac Valvular Disease, Robert P. Glover, Philadelphia.
New Drugs for the Treatment of Myasthenia Gravis, Thomas C. Fleming, New York.
Repeated Abortion, Carl T. Javert, New York.
Hormonal Control of Advanced Breast Cancer by Surgical Means: Oophorectomy, Adrenalectomy, and Hypophysectomy, Henry T. Randall, New York.
Personality Aspects of the Cancer Patient, William T. Lhamon, Houston, Texas.
Cancer of the Larynx, Francis E. LeJeune, New Orleans.
Diagnosis of Heart Disease, J. Murray Kinsman, Louisville, Ky.
Treatment of Ulcerative Colitis and Its Complications, Jacob A. Bargen, Rochester, Minn.

Clinicopathological conferences will be held Wednesday, 11:10 a. m.; Thursday, 11 a. m.; and Friday noon. A symposium, "Present Status of the Treatment of Urinary Infections," will be presented Thursday at 2 p. m. and a panel, "Problems in Antibiotic Therapy," Saturday at 10:30 a. m. There will be a dinner-dance at the Caribe Hilton, Saturday, 8 p. m.

GENERAL

Psychiatric Group Invites Papers.—The regional American Psychiatric Association research meeting will be held in Galveston, Texas, Feb. 18 and 19, 1955. The theme of the meeting will be "The Physiologic Basis, Values, Limitations, and Hazards of Pharmacologic Products Recently Introduced in the Treatment of Psychiatric Disorders." Members of the A. P. A. and others interested in presenting papers at this meeting are requested to contact Dr. Martin L. Towler, 112 N. Boulevard, Galveston.

Chicago Course in Clinical Hypoxia.—Through the courtesy of Northwestern University Medical School and Wesley Memorial Hospital, Chicago, the Society for the Prevention of Asphyxial Death will present its 98th course in clinical hypoxia, featuring laryngoscopy and intubation, Dec. 10 and 11, immediately preceding the Congress of the American Academy of Obstetrics and Gynecology (Dec. 14). Instruction will include dog and cadaver practice. Admission will be by application only. Information may be obtained from the Secretary, S. P. A. D., Inc., 2 E. 63rd St., New York.

Psittacosis.—According to the U. S. Public Health Service, the California Department of Public Health recently reported five cases of psittacosis among persons who were in contact with infected parakeets. One of the four parakeets associated with these cases was found by mouse inoculation to be infected with psittacosis.——Dr. Albert J. Chesley, Minnesota Department of Health, reported a case of psittacosis and stated that psittacosis virus has been isolated from a parakeet purchased in 1953 from a store in Virginia that obtained all its parakeets from a company in Chicago.

Weed Control Conference.—The public health section of the Northeastern Weed Control Conference, which will meet at the Hotel New Yorker, New York City, Jan. 5 to 7, 1955, has scheduled a panel discussion, "What People Are Doing in Weed Control to Affect Public Health," Thursday, from 11 a. m. to 12 noon. Other topics to be considered include "Pollen Collection Data Comparison," "Weed Control in Crops, a Benefit to Agriculture and Health," "Effects of Ragweed Control on Pollen Counts," "Report on the New York City Program and Recommendations for a Metropolitan Program," "National Hay Fever Fund Prospects," and "The Sussex County Highway Weed Control Program."

Meeting of Southern Surgical Association.—The 66th annual session of the Southern Surgical Association will convene at the Hollywood Beach Hotel, Hollywood Beach, Fla., Dec. 7 to 9. The sessions will open at 9:30 a. m. Tuesday with the presidential address of Dr. John C. Burch, Nashville, after which 45 presentations will be made. More than 40 invited speakers will participate in the program. There will be a handicap golf tournament Tuesday at 1:30 p. m. A cocktail party, 6:30 p. m., will precede the association dinner at 8 p. m. Wednesday. Dr. Daniel C. Elkin, Emory University, Ga., will serve as toastmaster, and Edward McCrady, Ph.D., president and vice-chancellor, University of the South, Sewanee, Tenn., will be guest speaker.

Interim American Board of Occupational Medicine.—The Interim American Board of Occupational Medicine is presently negotiating with the American Board of Preventive Medicine relative to the grouping of occupational medicine with other nationally recognized professional specialties in the general field of preventive medicine. Interested physicians who have not previously indicated their interest are invited to communicate with Dr. Carl M. Peterson, Secretary, Interim American Board of Occupational Medicine, 535 N. Dearborn St., Chicago 10. Inquirers will receive application forms and other essential information as these become available. Full instructions will include regulations governing basic eligibility, admission to certification without examination, examination procedures, fees, and other details. Prompt response will be appreciated.

Meeting on Nervous and Mental Disease.—The Association for Research in Nervous and Mental Disease will hold its 34th annual meeting at the Hotel Roosevelt, Madison Avenue and 45th Street, New York, Dec. 10 and 11. At the opening session, Dr. Hattie E. Alexander, New York, will speak on bacterial meningitides, exclusive of tuberculosis, and Dr. Ralph V. Platou, New Orleans, on tuberculous meningitis. Dr. Jonas E. Salk, Pittsburgh, will discuss "Present Status of the Poliomyelitis Problem" and Dr. Horace L. Hodes, New York, "Encephalitides and Postinfectious Encephalopathies." The final session will open Saturday, 2 p. m., with a symposium on juvenile schizophrenia, in which Dr. Reynold A. Jensen, Minneapolis, will serve as moderator for the following program:

General Concepts of the Disorder at Different Ages, Leo Kanner, Baltimore.
Problems in Differential Diagnosis, J. Cotter Hirschberg, Tokepa, Kan.
Treatment of Juvenile Schizophrenia, Lauretta Bender, New York.

Nobel Prize Awarded.—The 1954 Nobel prize in medicine and physiology was recently conferred jointly on John F. Enders, Ph.D., associate professor of bacteriology and immunology, Harvard Medical School, Boston; Dr. Thomas H. Weller, professor of tropical public health, Harvard School of Public Health; and Dr. Frederick C. Robbins, professor of pediatrics, Western Reserve University School of Medicine, Cleveland, "for their discovery of the ability of the poliomyelitis virus to grow in cultures of different tissues." The work was carried out in the research division of infectious diseases, Children's Medical Center, Boston, where Dr. Enders is director and Dr. Weller assistant director, and was financed by the National Foundation for Infantile Paralysis out of March of Dimes funds. In addition to sharing $35,066, the three recipients each receive the Nobel medal which contains about 8 oz. of gold, and the illuminated diploma.

Conference on Myasthenia Gravis.—The Myasthenia Gravis Foundation (2 E. 103rd St., New York 29) will hold a conference Dec. 8 and 9 at the University of Pennsylvania, Philadelphia. The sessions will open with "The Problem of Myasthenia Gravis" by Dr. Henry R. Viets, Boston, who is chairman of the medical advisory board of this voluntary, nonprofit organization. Over 20 presentations will be made, including "Neuromuscular Transmission in Myasthenia Gravis" by Dr. Harry C. Churchill-Davidson, London, England, and "Action of Extracts of the Thymus on Myasthenia Gravis" by Dr. Andrew Wilson, Liverpool, England. The scientific sessions will end with a summary of the discussions by Dr. George D. Gammon, professor of clinical neurology, University of Pennsylvania School of Medi-

cine, Philadelphia. There will be a dinner at 7 p. m. Wednesday at the Hotel Barclay. Communications should be addressed to the Myasthenia Gravis Foundation, Inc., 2 E. 103rd St., New York.

De Villiers Award.—The Robert R. de Villiers Foundation has initiated its third contest in memory of Robert R. de Villiers, who died of acute leukemia at the age of 16½ years, Oct. 20, 1944. The foundation announces that $5,000 will be made available for a preventive measure, cure, or control of leukemia and allied diseases and $1,500 or $1,000, respectively, for a significant contribution of practical or theoretical value. Papers will be received up to Oct. 20, 1955. Members of the jury are Dr. Albert Alder, professor of medicine, University of Zurich, Switzerland; Dr. William B. Castle, professor of medicine, Harvard Medical School, Boston; Dr. Jan Waldenstroem, professor of medicine, University of Lund, Sweden; and Dr. Maxwell M. Wintrobe, professor of medicine, University of Utah, Salt Lake City. Papers must have been either published or accepted for publication by a reputable journal in or outside the United States between Oct. 20, 1952, and Oct. 20, 1955. Information may be obtained from the office of the foundation, 1172 Park Ave., New York 28.

Kimble Methodology Award.—In recognition of their discovery of a simple method of growing poliomyelitis viruses in quantity in test tubes, the 1954 Kimble methodology research award for outstanding contribution to the field of public health was bestowed, Oct. 11, on John F. Enders, Ph.D., director of the research division of infectious diseases at Children's Medical Center, Boston, and associate professor of bacteriology and immunology at Harvard Medical School; Dr. Thomas H. Weller, assistant director of the research division of infectious diseases at the Children's Medical Center and head of the department of tropical public health in the Harvard School of Public Health; and Dr. Frederick C. Robbins, director of the department of pediatrics and contagious diseases at City Hospital, Cleveland, and professor of pediatrics at Western Reserve University School of Medicine, Cleveland. Presentation of the award was made at the annual banquet of the Conference of State and Provincial Public Health Laboratory Directors at the Statler Hotel, Boston. The Kimble methodology award, which includes $500 in cash and an engraved plaque, is sponsored by the Kimble Glass Company, a subsidiary of the Owens-Illinois Glass Company. [NOTE.—Drs. Enders, Weller, and Robbins were later announced (Oct. 21) as the winners of the 1954 Nobel prize in medicine and physiology (see page 1338)].

Trudeau Society Invites Papers.—The American Trudeau Society, medical section of the National Tuberculosis Association, invites submission of papers for the 1955 annual meeting in Milwaukee, May 23 to 27. Abstracts, to be submitted in duplicate before Jan. 1, 1955, with an absolute deadline of Feb. 1, to Dr. David T. Carr, Chairman of the Medical Sessions Committee, 200 First St., S. W., Rochester, Minn., should be limited to a 300 word summary including important data and conclusions. Charts and tables should be attached to aid in the selection of papers. Name, title, and complete address of the senior author and co-authors should be included in each abstract, with the author presenting the paper listed first. Subjects for presentation may include all scientific aspects of tuberculosis and nontuberculous respiratory and cardiopulmonary disease as well as the results of investigative work bearing on these subjects. Those wishing to present subjects of a confidential nature from the armed forces or other sources must clear the material through official channels before submitting the abstracts to the chairman of the medical sessions committee. Papers presented at the annual meeting must be original contributions, not previously presented or published. All such papers should be considered as belonging exclusively to the National Tuberculosis Association and should not be submitted for publication elsewhere without advance permission of the National Tuberculosis Association.

Seven Women Physicians Lead Graduating Classes.—The American Medical Women's Association has presented cash awards of $100 and achievement citations to the following physicians, each of whom graduated as the top-ranking student in her class. Dr. E. Jean Cowsert, who plans to intern at Wayne County General Hospital, Eloise, Mich., graduated in first place in a class of 60 students at the Medical College of Alabama, Birmingham, the first woman graduate to achieve this distinction in the history of the medical college. Dr. Ethel Frances Young, Northwestern University Medical School, Chicago, graduated in first place in a class of 135 students, after having had the highest average for the first three years of medical school. She will intern at Los Angeles County Hospital. Dr. Mary Lou Hoover, who will intern at Colorado General Hospital, Denver, graduated in a class of 100 from the Medical College of Virginia, Richmond. Dr. Martha Wells Usher graduated in a class of 153 students at the University of Michigan Medical School, Ann Arbor, and will intern at Philadelphia General Hospital. Dr. Ray Schwab Greenberg, University of Tennessee College of Medicine, Memphis, will take her internship at St. Vincent's Hospital, New York. Dr. Katharine Emory Spreng, Western Reserve University School of Medicine, Cleveland, will intern at Massachusetts General Hospital, Boston. Dr. Jacqueline Maioriello Mauro, Philadelphia, graduated *magna cum laude* from the Woman's Medical College of Pennsylvania, Philadelphia.

Health Officers' Meeting in Washington.—The annual meeting of the Association of State and Territorial Health Officers and the 53rd annual conference of the surgeon general of the Public Health Service and the chief of the Children's Bureau with the state and territorial health officers, the state mental health authorities, and representatives of state hospital survey and construction agencies will be held in Washington, D. C., Dec. 6 to 10. The general session of the conference will open at 9 a. m. Tuesday in the auditorium of the Health, Education, and Welfare Building, where presentations will be made by Mrs. Oveta Culp Hobby, secretary of the Department of Health, Education, and Welfare; Dr. Leonard A. Scheele, surgeon general, Public Health Service; and Dr. Martha M. Eliot, chief, Children's Bureau. At 3 p. m. "International Cooperation for Improved Health" will be presented by Dr. Henry Van Zile Hyde and staff, Division of International Health. Dr. Arthur P. Noyes, Norristown, Pa., president, American Psychiatric Association, will be the speaker at the association banquet in the Washington Hotel at 7 p. m. At 10:45 a. m. Wednesday the general session of the association will present a program on administration, with Dr. Herman E. Hilleboe, Albany, N. Y., and Dr. Russell E. Teague, Philadelphia, as speakers. Dr. Daniel L. Seckinger will address the luncheon at the District of Columbia General Hospital, Washington, D. C., 12:30 p. m. There will be a tour of the Clinical Center, National Institutes of Health, Bethesda, Md., Thursday at 10:45 a. m.

Meeting of Public Health Physicians.—The American Association of Public Health Physicians held its first annual meeting in Buffalo, Oct. 11 to 13, in conjunction with the annual meeting of the American Public Health Association. The organization, which was established in Chicago Feb. 6 (THE JOURNAL, May 1, 1954, page 51), numbers about 600 charter members. The following officers were elected: president, Dr. Edward R. Krumbiegel, commissioner of health, Milwaukee; president-elect, Dr. Wilson T. Sowder, state health officer, Jacksonville, Fla.; vice-president, Dr. Leon Banov, director, Charleston County Heatlh Department, Charleston, S. C.; and secretary-treasurer, Dr. Gerald R. Clark, state health director, Santa Fe, N. Mex. The objectives of the new organization were outlined as follows:

1. To provide a greater degree of leadership at the national level on the part of all public health physicians in the field of public health in the interest of better health for the people of the United States and her territories.
2. To promote legislation and to influence public opinion at the national level in the presentation of the aims and objectives of departments of health at all levels of government.
3. To represent public health physicians at the national level in their relationships with other national organizations and groups.
4. To work for improved practices in the field of public health administration from the viewpoint of the public health physician.
5. To serve as a liaison group between the American Medical Association and the American Public Health Association in an effort to bring both groups closer together in the public interest.
6. To be interested in and to promote the best interests of public health physicians.

The American Association of Public Health Physicians plans to hold an interim luncheon meeting during the American Medical Association convention in Atlantic City next June.

Society News.—At its recent meeting the **American Ophthalmological Society** elected the following officers: Dr. Everett L. Goar, Houston, Texas, president; Dr. Alan C. Woods, Baltimore, vice-president; Dr. Maynard C. Wheeler, New York, secretary-treasurer; and Dr. Gordon M. Bruce, New York, editor.—— Newly elected officers of the **National Tuberculosis Association** include Dr. John H. Skavlem, Cincinnati, president; Edward T. Fagan, Brooklyn, president-elect; President Dwight D. Eisenhower and Dr. Leonard A. Scheele, Washington, D. C., honorary vice-presidents; Dr. Mario McC. Fischer, Duluth, Minn., and Mr. Julian C. Sipple, Savannah, Ga., vice-presidents; Mrs. Morrell DeReign, Caruthersville, Mo., secretary; and Mr. Collier Platt, New York, treasurer.——At the annual meeting of the **American Association of Obstetricians, Gynecologists and Abdominal Surgeons** in Hot Springs, Va., Sept. 9 to 11, by a change in the constitution the organization resumed the traditional name, "The American Association of Obstetricians and Gynecologists," under which it was organized in 1888. The addition to the name, "Abdominal Surgeons," adopted in 1920, has now been discarded. Officers elected were: president, Dr. Thaddeus L. Montgomery, Philadelphia; president-elect, Dr. Lawrence M. Randall, Rochester, Minn.; vice-president, Dr. David N. Barrows, New York; secretary, Dr. Frank R. Lock, Winston-Salem, N. C.; assistant secretary, Dr. E. Stewart Taylor, Denver; and treasurer, Dr. Ward F. Seeley, Detroit. The 66th annual meeting will be held at the Homestead, Hot Springs, Va., Sept. 8 to 10, 1955.

PHILIPPINE ISLANDS

Society News.—Newly elected officers of the Philippine Medical Association include: Dr. Mariano C. Icasiano, Manila, president; Dr. Herardo del Castillo, president-elect; Dr. Jose L. de Guzman, Mangaldan, Pangasinan, second vice-president for Luzon; Dr. Pedro Mayuga, Tagbilaran, Bohol, third vice-president for the Visayas; Dr. Gregorio B. Huerto, Medina, Misamis Or., first vice-president for Mindanao and Sulu; and Dr. Victorino de Dios, Londo, Manila, councilor. To fill the positions left vacant by the death of Dr. Manuel D. Penas, Dr. Rixto Maceda Jr., Manila, was elected secretary-treasurer, and Dr. Renato M. Guerrero, Manila, was named editor-in-chief of the *Journal of the Philippine Medical Association.*

FOREIGN

Medical Progress in India.—The Indian government has taken several steps in furthering medical progress. These include establishment of a Cancer Institute in Bombay and a Central Leprosy Training and Research Institute at Tirumani Madras State and plans to open an All-India Mental Health Institute at Bangalore. Since the opening of the BCG campaign in 1948, 8½ million persons have been vaccinated and 26 million have been tuberculin tested. The National Malaria Control Scheme has 125 field units operating in highly malarious regions and in a period of three years will protect from malaria nearly 150 million persons. The Nutrition Research Laboratory located at Coonoor will be moved to Hyderabad. A Maternal and Child Health Centre at the All-India Institute of Hygiene in Calcutta, equally financed by the Indian government and the UNICEF, will train workers in maternal and child welfare. The number of physicians in India has increased from 45,000 in 1946 to 60,000, and their distribution is such that the urban population has one physician for 1,360 and the rural, one for 20,000. To encourage physicians to take up service in rural areas, the West Bengal government is giving a monthly allowance of 100 rupees ($21) in addition to a fixed salary. The Indian government, which has provided funds annually in its budget for birth control clinics, invites experts on birth control and population questions to study and advise on keeping down the growth of population, which will help in raising the standard of living.

DEATHS IN OTHER COUNTRIES

Dr. Manuel D. Penas, secretary-treasurer, Philippine Medical Association, editor-in-chief of its journal, and assistant head and professor of the department of pathology of the University of Santo Tomas Faculty of Medicine and Surgery, died June 9.

MEETINGS

AMERICAN MEDICAL ASSOCIATION: Dr. George F. Lull, 535 North Dearborn St., Chicago 10, Secretary.

1955 Annual Meeting, Atlantic City, N. J., June 6-10.
1955 Clinical Meeting, Boston, Nov. 29-Dec. 2.
1956 Annual Meeting, Chicago, June 11-15.
1956 Clinical Meeting, Seattle, Nov. 27-30.
1957 Annual Meeting, New York, June 3-7.

ANNUAL CONGRESS ON INDUSTRIAL HEALTH, Hotel Shoreham, Washington, D. C., Jan. 24-26. Dr. Carl M. Peterson, 535 North Dearborn St., Chicago 10, Secretary.

AMERICAN ACADEMY OF DENTAL MEDICINE, Hotel Statler, New York, Dec. 5. Dr. William M. Greenhut, 124 East 84th St., New York 28, Secretary.

AMERICAN ACADEMY OF DERMATOLOGY AND SYPHILOLOGY, Palmer House, Chicago, Dec. 4-9. Dr. J. E. Rauschkolb, P. O. Box 6565, Cleveland 1, Secretary.

AMERICAN ACADEMY OF OBSTETRICS AND GYNECOLOGY, Palmer House, Dec. 14. Dr. Paul Hodgkinson, 116 South Michigan Ave., Chicago 3, Secretary.

AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS, Hotel Statler, Los Angeles, Jan. 29-Feb 3. Dr. J. R. Norcross, 122 S. Michigan Blvd., Chicago 3, Secretary.

AMERICAN CONGRESS ON OBSTETRICS AND GYNECOLOGY, Palmer House, Dec. 13-17. Dr. R. Gordon Douglas, 116 South Michigan Ave., Chicago 3, General Chairman.

ASSOCIATION FOR RESEARCH IN NERVOUS AND MENTAL DISEASES, Hotel Roosevelt, New York, Dec. 10-11. Dr. C. C. Hare, 710 West 168th Street, New York 32, Secretary.

ASSOCIATION OF STATE AND TERRITORIAL HEALTH OFFICERS, Hotel Washington, Washington, D. C., Dec. 6-10. Dr. Franklin D. Yoder, State Board of Health, Cheyenne, Wyo., Secretary.

CONFERENCE ON MYASTHENIA GRAVIS, University of Pennsylvania School of Medicine, Philadelphia, Dec. 8-9. Mrs. Agnes K. Peterson, 2 East 103rd St., New York 29, Executive Director.

EASTERN SECTION, AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY, Hotel Warwick, Philadelphia, Jan. 7. Dr. Benjamin H. Shuster, 1824 Pine St., Philadelphia 3, Chairman.

GERONTOLOGICAL SOCIETY, University of Florida, Gainesville, Fla., Dec. 28-30. Dr. Nathan W. Shock, Baltimore City Hospitals, Baltimore 24, Secretary.

INTERNATIONAL POST-GRADUATE MEDICAL ASSEMBLY OF SOUTHWEST TEXAS, San Antonio, Texas, Jan. 24-26. Dr. John M. Smith Jr., P.O. Box 2445, San Antonio 6, Texas, Secretary.

MIDDLE SECTION, AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY, Sheraton-Cadillac Hotel, Detroit, Jan. 24. Dr. James E. Croushore, 3001 West Grand Blvd., Detroit 2, Chairman.

PUERTO RICO MEDICAL ASSOCIATION, Santurce, Dec. 8-12. Dr. Luis R. Guzman-Lopez, Box 9111, Santurce, Secretary.

RADIOLOGICAL SOCIETY OF NORTH AMERICA, Biltmore Hotel, Los Angeles, Dec. 5-10. Dr. Donald S. Childs, 713 East Genesee St., Syracuse 2, N. Y., Secretary.

SECTIONAL MEETINGS, AMERICAN COLLEGE OF SURGEONS:
Texas, Galveston, Buccaneer and Galvez Hotels, Jan. 17-19. Dr. Robert M. Moore, 900 Strand Street, Galveston, Chairman.

SOUTHERN SECTION, AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY, Medical School Auditorium, Charlottesville, Va., Jan. 24. Dr. G. Slaughter Fitz-Hugh, 104 East Market St., Charlottesville, Va., Chairman.

SOUTHERN SURGICAL ASSOCIATION, Hollywood Beach Hotel, Hollywood, Fla., Dec. 7-9. Dr. George G. Finney, 2947 St. Paul St., Baltimore 18, Secretary.

WESTERN SECTION, AMERICAN FEDERATION FOR CLINICAL RESEARCH, Carmel, Calif., Jan. 27. Dr. Arthur B. French, University of Utah College of Medicine, Salt Lake City, Secretary.

WESTERN SECTION, AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY, The Town House, Los Angeles, Jan. 15-16. Dr. Victor Goodhill, 2007 Wilshire Blvd., Los Angeles 57, Vice President.

WESTERN SOCIETY FOR CLINICAL RESEARCH, Carmel, Calif., Jan. 28-29. Dr. Herbert N. Hultgren, Stanford Hospital, San Francisco 15, Secretary.

FOREIGN AND INTERNATIONAL

BRITISH MEDICAL ASSOCIATION, Representative Meeting, London, England, June 1-4, 1955. Dr. A. Macrae, B.M.A. House, Tavistock Square, London, W.C.1, England, Secretary.

CANADIAN AND BRITISH MEDICAL ASSOCIATIONS, Joint Meeting, Toronto, Canada, June 20-22, 1955. Dr. Arthur D. Kelly, 244 St. George St., Toronto, Canada, General Secretary.

COMMONWEALTH HEALTH AND TUBERCULOSIS CONFERENCE, Royal Festival Hall, London, England, June 21-25, 1955. Mr. J. H. Harley Williams, Tavistock House North, Tavistock Square, London, W.C.1, England, Secretary General.

CONGRESS OF INTERNATIONAL ASSOCIATION OF APPLIED PSYCHOLOGY, London, England, July 18-23, 1955. Dr. C. B. Frisby, National Institute of Industrial Psychology, 14 Welbeck St., London, W.1, England, President.

CONGRESS OF INTERNATIONAL ASSOCIATION OF PSYCHOTECHNOLOGY, London, England, July 18-23, 1955. For information write: Dr. C. B. Frisby, Director, National Institute of Industrial Psychology, 14 Welbeck St., London, W.1, England.

CONGRESS OF THE INTERNATIONAL ASSOCIATION FOR THE STUDY OF THE BRONCHI, Stockholm, Sweden, June 18-19, 1955. For information write: Dr. J. M. Lemoine, 187 boulevard St. Germain, Paris 7e, France.

CONGRESS OF INTERNATIONAL DIABETES FEDERATION, Cambridge, England, July 4-8, 1955. Mr. James G. L. Jackson, 152 Harley St., London, W.1, England, Executive Secretary General.

CONGRESS OF INTERNATIONAL SOCIETY OF SURGERY, Copenhagen, Denmark, July 23-29, 1955. Dr. L. Dejardin, 141, rue Belliard, Brussels, Belgium, General Secretary.

EUROPEAN CONGRESS ON RHEUMATISM, Scheveningen, The Hague, Netherlands, June 13-17, 1955. Dr. H. van Swaay, Pieter Bothstraat 12, The Hague, Netherlands, Secretary.

HEALTH CONGRESS OF THE ROYAL SANITARY INSTITUTE, Bournemouth, England, April 26-29, 1955. Mr. P. Arthur Wells, Royal Sanitary Institute, 90 Buckingham Palace Road, London, S.W.1, England, Secretary.

INTER-AMERICAN CONGRESS OF RADIOLOGY, Shoreham Hotel, Washington, D. C., U. S. A., April 24-29, 1955. Dr. Eugene P. Pendergrass, 3400 Spruce St., Philadelphia 4, Pa., U. S. A., Secretary-General.

INTER-AMERICAN SESSION, AMERICAN COLLEGE OF SURGEONS, Universidad Mayor de San Marcos de Lima, Lima, Peru, S. A., Jan. 11-14, 1955. Dr. Michael L. Mason, 40 East Erie St., Chicago 11, Ill., U. S. A., Secretary.

INTERNATIONAL ANATOMICAL CONGRESS, Paris, France, July 25-30, 1955. Prof. Gaston Cordier, 45, rue des Saints-Pères, Paris 6e, France, Secretary-General.

INTERNATIONAL ANESTHESIA RESEARCH SOCIETY, Washington, D. C., U.S.A., Oct. 24-27, 1955. For information write: Dr. William Friend, 515 Nome Avenue, Akron 20, Ohio, U.S.A.

INTERNATIONAL CONGRESS OF ALLERGOLOGY, Rio de Janeiro, Brazil, S. A., Nov. 6-12, 1955. Dr. Bernard N. Halpern, 197 boulevard St. Germain, Paris 7e, France, Secretary General.

INTERNATIONAL CONGRESS OF ANGIOLOGY AND HISTOPATHOLOGY, Fribourg, Switzerland, Sept. 2—, 1955. For information write: Dr. Gerson, 4 rue Pasquier, Paris 8e, France.

INTERNATIONAL CONGRESS OF BIOCHEMISTRY, Brussels, Belgium, Aug. 1-6, 1955. Prof. C. Liebecq, 17 Place Delcour, Liège, Belgium, Secretary-General.

INTERNATIONAL CONGRESS OF COMPARATIVE PATHOLOGY, Lausanne, Switzerland, May 26-31, 1955. Professor Hauduroy, 19 rue Cesar Roux, Lausanne, Switzerland, Secretary-General.

INTERNATIONAL CONGRESS OF CRIMINOLOGY, London, England, Sept. 11-18, 1955. For information write: Dr. Carroll, 28 Weymouth St., London, W.1, England.

INTERNATIONAL CONGRESS OF PLASTIC SURGERY, Stockholm, Sweden, Aug. 1-4, 1955, and Uppsala, Sweden, Aug. 5, 1955. Dr. Tord Skoog, Uppsala, Sweden, General Secretary.

INTERNATIONAL CONGRESS OF UROLOGY, Athens, Greece, April 10-18, 1955. Dr. Z. Kaires, 25, rue Voukourestion, Athens, Greece, Secretary General.

INTERNATIONAL HOSPITAL CONGRESS, Lucerne, Switzerland, May 30-June 3, 1955. Capt. J. E. Stone, International Hospital Federation, 10 Old Jewry, London, E.C.2, England, Hon. Secretary.

INTERNATIONAL MEDICAL CONGRESS, Verona, Italy, Sept. 1-4, 1955. For information write: % Offices of the International Verona Fair, Piazza Bra., Verona, Italy.

INTERNATIONAL SURGICAL CONGRESS, Geneva, Switzerland, May 23-26, 1955. Dr. Max Thorek, 1516 Lake Shore Drive, Chicago, Illinois, U. S. A., Secretary-General.

INTERNATIONAL SYMPOSIUM ON CARDIOVASCULAR SURGERY, Henry Ford Hospital, Detroit, Michigan, U.S.A., March 17-19, 1955. Dr. Conrad R. Lam, 2799 West Grand Boulevard, Detroit 2, Michigan, U.S.A., Chairman of Program Committee.

INTERNATIONAL SYNDICATE OF GYNECOLOGISTS AND OBSTETRICIANS, Meeting Hall of Medical Societies, Paris, France, June 27-28, 1955. Dr. Jacques Courtois, 1, rue Racine, Saint-Germain-en-Laye (S & O), France, Secretary-General.

JAPAN MEDICAL CONGRESS, Kyoto University and Kyoto Prefectural Medical College, Kyoto, Japan, April 1-5, 1955. Dr. Mitsuharu Goto, University Hospital, Medical Faculty of Kyoto University, Kyoto, Japan, Secretary-General.

LATIN AMERICAN CONGRESS OF PHYSICAL MEDICINE, Lima, Peru, S. A., Feb. 14-19, 1955. Dr. Cassius Lopez de Victoria, 176 East 71st St., New York 21, N. Y., U. S. A., Executive Director.

LATIN AMERICAN ELECTROENCEPHALOGRAPHICAL CONGRESS, Montevideo, Uruguay, S.A., March 21-24, 1955. For information write: Dr. R. Arana-Iniquez, Convencion 1287, Montevideo, Uruguay, S.A.

LATIN AMERICAN NEUROSURGICAL CONGRESS, Montevideo, Uruguay, S.A., March 21-24, 1955. For information write: Dr. R. Arana-Iniquez, Convencion 1287, Montevideo, Uruguay, S.A.

MIDDLE EAST MEDICAL ASSEMBLY, Campus of American University of Beirut, Beirut, Lebanon, April 22-24, 1955. Dr. John L. Wilson, American University of Beirut, Beirut, Lebanon, Chairman.

NATIONAL CONGRESS OF TUBERCULOSIS AND SILICOSIS, Mexico, D.F., Mexico, Jan. 23-29, 1955. Dr. Jose Nava Gonzalez, Balderas 32-312, Ap. Postal 7267, Mexico, D.F., Mexico, Secretary General.

NEURORADIOLOGIC SYMPOSIUM, London, England, Sept. 13-17, 1955. Dr. R. D. Hoare, National Hospital, Queen Square, London, W.C.1, England, Secretary.

PAN-AMERICAN ACADEMY OF GENERAL PRACTICE, Lima, Peru, S. A., Feb. 11-25, 1955. Dr. Arturo Martinez, 54 East 72nd St., New York 21, N. Y., U. S. A., Secretary.

WORLD MEDICAL ASSOCIATION, Vienna, Austria, Sept. 20-26, 1955. Dr. Louis H. Bauer, 345 East 46th St., New York 17, N. Y., U. S. A., Secretary-General.

EXAMINATIONS AND LICENSURE

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II in 1955.* Feb. 1-2, April 19-20 (Part II only), June 21-22, Sept. 6-7 (Part I only). Candidates may file applications at any time, but the National Board must receive them at least six weeks before the date of the examination. New candidates should apply by formal registration; registered candidates should notify the board by letter and forward their fees. Exec. Sec., Dr. John B. Hubbard, 133 South 36th St., Philadelphia 4.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written.* July 15. Final date for filing applications is Jan. 15. *Oral.* Colorado Springs, March 27-31. New York City, Oct. 23-27. Sec., Dr. Curtiss B. Hickcox, 80 Seymour St., Hartford 15.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written.* Various centers, June 30. *Oral.* October, date and place to be announced. To be eligible, candidates must complete 36 months of training by October 1. Final date for filing application is March 15. Exec. Sec., Miss Janet Newkirk, 129 E. 52nd St., New York 22.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral.* New Orleans, Feb. 1-4; Philadelphia, May 4-5; Washington, D. C., May 6-7; Portland, Ore., Sept. 14-16; Chicago, Nov. 30-Dec. 1. Exec. Sec., Dr. William A. Werrell, 1 West Main St., Madison 3, Wis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Part I, Written Examination and Review of Case Histories.* Various cities of the United States and Canada and military centers outside the continental United States, Feb. 4. Final date for filing applications was Oct. 1. *Part II, Oral Examination.* Chicago, May 12-20. Sec., Dr. Robert L. Faulkner, 2105 Adelbert Road, Cleveland 6.

AMERICAN BOARD OF OPHTHALMOLOGY: *Practical examinations, 1954.* New York City, Dec. 5-9. *Written, 1955.* Various cities, Jan. 24-25. Final date for filing application was July 1, 1954. *Practical examinations, 1955.* Philadelphia, June 10-15; Chicago, Oct. 9-14. Sec., Dr. Edwin B. Dunphy, 56 Ivie Road, Cape Cottage, Maine.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Part I.* Various locations, April. Final date for filing applications was November 30. *Part II.* Los Angeles, Jan. 27-28. Sec., Dr. Harold A. Sofield, 122 South Michigan Ave., Chicago 3.

AMERICAN BOARD OF OTOLARYNGOLOGY: Richmond, Va., March 6-10. Sec., Dr. Dean M. Lierle, University Hospital, Iowa City.

AMERICAN BOARD OF PEDIATRICS: *Written.* Selected locations, Jan. 14. This is the only written examination which will be given during 1955. *Oral.* New Orleans, March 4-6; Detroit, April 8-10; New York City, June 10-12; Chicago, Oct. 7-9; and Washington, D. C., Dec. 2-4. Admin. Sec., Mrs. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

AMERICAN BOARD OF PHYSICAL MEDICINE AND REHABILITATION: Philadelphia, June 5-6. The final date for filing applications is March 1. Sec., Dr. Earl C. Elkins, 30 N. Michigan Ave., Chicago 2.

AMERICAN BOARD OF PLASTIC SURGERY: *Entire Examination.* Washington, D. C., April 30-May 2. Final date for filing case reports is Jan. 1. Corres. Sec., Miss Estelle E. Hillerich, 4647 Pershing Ave., St. Louis 8.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York, Dec. 13-14; New Orleans, Feb. 28-March 1, 1955; San Francisco, mid-October, 1955; New York City, December, 1955. Sec., Dr. David A. Boyd, 102-110 Second Ave. S.W., Rochester, Minnesota.

AMERICAN BOARD OF RADIOLOGY: Chicago, week of May 22; week of Dec. 4. Final date for filing applications for the spring examination was Dec. 1. Those candidates who will complete the required three years' training by June 30, 1955, will be eligible to appear for examination in May, and those candidates who will complete their training by Dec. 31, 1955, will be eligible to appear for examination in the fall. Sec., Dr. B. R. Kirklin, 429 First National Bank Bldg., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Part I.* March 30. *Part II.* Kansas City, Kan., Dec. 13-14; New Orleans, Jan. 17-18; Baltimore, Feb. 14-15; Cincinnati, March 14-15; San Francisco, April 18-19; Boston, May 16-17; Philadelphia, June 13-14. Sec., Dr. John B. Flick, 255 S. Fifteenth St., Philadelphia 2.

THE BOARD OF THORACIC SURGERY: *Written.* February. Final date for filing applications is Jan. 1. Sec., Dr. Wm. M. Tuttle, 1151 Taylor Ave., Detroit 2.

DEATHS

Dunham, George Clark ⊕ Major General, U. S. Army, retired, Grants Pass, Ore.; born in Mitchell, S. D., July 27, 1887; University of Oregon Medical School, Portland, 1914; received the degree of doctor of public health from Johns Hopkins University School of Hygiene and Public Health, Baltimore, in 1921, a degree (honor graduate) from the London (England) School of Tropical Medicine in 1922, a master of arts degree from George Washington University, Washington, D. C., in 1925, and a diploma from the Army War College in 1926; commissioned as a first lieutenant in the Army Medical Corps Reserve in 1915; on June 16, 1916, was called to active duty; entered the regular Army as a first lieutenant April 10, 1917; became a lieutenant colonel in 1937, colonel (temporary) in 1941, colonel in 1943, brigadier general (temporary) in 1943, and major general (temporary) on Feb. 22, 1944; retired on Oct. 31, 1945, because of physical disability, on completing almost 30 years of service; in 1917 graduated from the Army Medical School, where he was instructor in biological chemistry, 1919-1920, and in 1936 became director of laboratories; during World War I served with the American Expeditionary Forces in France, for which service Gen. John J. Pershing cited him for meritorious service; subsequently was awarded the Purple Heart; among his assignments were those of chief, division of preventive medicine, Office of the Surgeon General, 1923-1925, director, department of sanitation, Medical Field Service School, Carlisle Barracks, Pa., 1926-1931, and technical adviser of public health and welfare to the governor general of the Philippine Islands, 1931-1935; appointed director of the new division of health and sanitation created in 1942 in the Office of the Coordinator of Inter-American Affairs; on Sept. 2, 1943, became executive vice-president of the Institute of Inter-American Affairs and assistant coordinator in charge of the basic economy department; in 1945 received the Distinguished Service medal; in April, 1945, a health center was named for him at Asuncion, Paraguay; a specialist certified by the American Board of Preventive Medicine; a fellow of the American College of Physicians and of the American Public Health Association; member of the House of Delegates, American Medical Association, 1925, 1939, 1940; member of the American Academy of Tropical Medicine, Society of American Bacteriologists, American Society of Tropical Medicine, Association of Military Surgeons of the United States, and the National Malaria Society; author of "Military Preventive Medicine," presently in its sixth edition; died in the Letterman Army Hospital, San Francisco, Oct. 4, aged 67, of lymphoblastoma.

Hays, Charles Elliott ⊕ Johnstown, Pa.; born in Junction City, Kan., Dec. 9, 1883; University of Pennsylvania Department of Medicine, Philadelphia, 1908; past president and former member of the board of directors of the Cambria County Medical Society; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology and the American Trudeau Society; served during World War I; attending bronchoscopist to the Cresson (Pa.) State Tuberculosis Hospital; otolaryngologist of the Veterans Administration; formerly chief of otolaryngology on the staff of the Mercy Hospital; consultant and formerly chief of otolaryngology and chief of bronchoscopy and esophagoscopy at the Conemaugh Valley Memorial Hospital, where he died Sept. 23, aged 71.

Hammack, Roy Wallace ⊕ Los Angeles; born May 19, 1886; Johns Hopkins University School of Medicine, Baltimore, 1911; emeritus professor of pathology at College of Medical Evangelists, Loma Linda and Los Angeles; specialist certified by the American Board of Pathology; founding fellow of the College of American Pathologists; member of the American Society of Clinical Pathologists; served during World War I; city bacteriologist of Los Angeles, 1916-1917; affiliated with the Los Angeles General Hospital; director of laboratories of the Hospital of the Good Samaritan; died Sept. 20, aged 68, of leukemia and phlebitis.

Martin, Paul Howard ⊕ Jacksonville, Fla.; Northwestern University Medical School, Chicago, 1924; specialist certified by the American Board of Orthopaedic Surgery; member of the American Academy of Orthopaedic Surgeons; affiliated with Hope Haven, St. Vincent's, and St. Luke's hospitals; consultant in orthopedic surgery for the Veterans Administration; served during World War I; for many years orthopedic surgeon of the Florida Crippled Children's Commission in the Jacksonville district; died in the Veterans Administration Hospital in Lake City, Sept. 3, aged 58, of melanoma.

Aubrey, George Edward ⊕ Kansas City, Mo.; University of Louisville (Ky.) Medical Department, 1916; served during World War I; formerly medical rating specialist for the Veterans Administration; died in the Veterans Administration Hospital Sept. 11, aged 65, of coronary arteriosclerosis.

Bauer, John ⊕ Long Island City, N. Y.; Magyar Királyi Erzsébet Tudományegyetem Orvostudományi, Pecs, Hungary, 1927; affiliated with Hospital for Joint Diseases and the Mount Sinai Hospital in New York City; died Sept. 27, aged 54, of a heart attack.

Blance, Clarke ⊕ Colonel, U. S. Army, retired, Washington, D. C.; University of Vermont College of Medicine, Burlington, 1913; fellow of the American College of Surgeons; entered the regular Army as a first lieutenant on Aug. 27, 1917; promoted to colonel April 6, 1943; retired Jan. 31, 1947; died in the Walter Reed Army Hospital Oct. 9, aged 68, of subarachnoid hemorrhage and arteriosclerosis.

Blier, Zachary Abraham ⊕ Chicago; Rush Medical College, Chicago, 1931; member of Alpha Omega Alpha (honorary medical fraternity); a major in the Medical Corps of the U. S. Army during World War II; director of research for the Wander Company; died Nov. 3, aged 49, of coronary thrombosis, in New York City.

Block, Ira, Beverly Hills, Calif.; Loyola University School of Medicine, Chicago, 1928; died in Chicago Sept. 26, aged 52.

Braunstein, Joseph Elias ⊕ Brooklyn; University and Bellevue Hospital Medical College, New York, 1908; served on the staffs of the Prospect Heights, Greenpoint, and Brooklyn Eye and Ear hospitals; one of the founders and past president of the Menorah Home for the Aged and Infirm; died Oct. 16, aged 75.

Brisbois, Harold Joseph Anthony ⊕ Davison, Mich.; University of Michigan Medical School, Ann Arbor, 1924; died July 2, aged 58, of coronary thrombosis.

Bruce, Robert Arthur ⊕ Pasadena, Calif.; University of California Medical School, San Francisco, 1940; specialist certified by the American Board of Dermatology and Syphilology; served during World War II; on the staff of the Huntington Memorial Hospital; died Oct. 12, aged 39.

Buddy, Edward Philip ⊕ St. Louis; St. Louis University School of Medicine, 1910; assistant professor of internal medicine at his alma mater; specialist certified by the American Board of Internal Medicine; past president of St. Louis Medical Society; for many years affiliated with St. Louis City, Alexian Brothers', De Paul, and St. Anthony's hospitals and St. Mary's Group of Hospitals; died in St. Mary's Hospital Oct. 5, aged 72.

Carr, George Hopkins ⊕ Portsmouth, Va.; University of Maryland School of Medicine, Baltimore, 1896; affiliated with Maryview Hospital and the Kings Daughters Hospital, where he died Oct. 10, aged 79, of cerebral hemorrhage and arteriosclerosis.

⊕ Indicates Member of the American Medical Association.

Chavigny, Charles Noel, New Orleans; Medical Department of Tulane University of Louisiana, New Orleans, 1899; fellow of the American College of Surgeons; past president of the Orleans Parish Medical Society; affiliated with Touro Infirmary; died Sept. 27, aged 76, of coronary thrombosis.

Chinn, George Edward ✠ Lexington, Ky.; Johns Hopkins University School of Medicine, Baltimore, 1903; served on the staff of the Veterans Administration Hospital; died in St. Joseph Hospital July 25, aged 76, of cerebral arteriosclerosis.

Clark, Ralph Elden ✠ Spokane, Wash.; Jefferson Medical College of Philadelphia, 1934; member of the American Academy of General Practice; served during World War II; for many years physician for the city police department; affiliated with the Deaconess and St. Luke's hospitals and Sacred Heart Hospital, where he died Oct. 1, aged 48, of leukemia.

Coblin, Reuben M. ✠ Frankfort, Ky.; Miami Medical College, Cincinnati, 1897; past president of the Franklin County Medical Society; served as city physician and health officer; affiliated with King's Daughters Hospital, where he died Sept. 11, aged 79, of cirrhosis of the liver.

Coffield, Abe W., Drumright, Okla.; Hospital College of Medicine, Louisville, Ky., 1903; died Oct. 5, aged 85, of chronic myocarditis.

Cooley, Edward Louis, St. Louis; Kentucky School of Medicine, Louisville, 1892; died in the Missouri Baptist Hospital Aug. 1, aged 91, of infarction of myocardium due to arteriosclerotic heart disease.

Cooper, David Leonard ✠ Erie, Pa.; University of Pittsburgh School of Medicine, 1925; formerly on the faculty of his alma mater; member of the American Academy of Dermatology and Syphilology; on the staffs of the Hamot and St. Vincent's hospitals; died in the Soldiers and Sailors Memorial Hospital, Wellsboro, Sept. 26, aged 52, after an operation for ruptured ulcer.

Cooper, Ward Jr. ✠ Palo Alto, Calif.; Stanford University School of Medicine, San Francisco, 1948; certified by the National Board of Medical Examiners; served as a first lieutenant in the U. S. Navy and was attached to the Naval Hospital in Oakland; spent a year in Korea aboard the hospital ship Consolation; assistant resident in ophthalmology at Highland Hospital in Oakland; died Sept. 22, aged 29, of injuries received in an automobile accident.

Cramer, Richard Allen, Oak Ridge, Tenn.; Northwestern University Medical School, Chicago, 1945; affiliated with Oak Ridge Hospital; died Sept. 24, aged 34, in an automobile accident.

Dawes, Raymond ✠ Houston, Texas; Dearborn Medical College, Chicago, 1907; served during World War I; died Aug. 3, aged 83, of cerebral hemorrhage.

Doornink, William ✠ Orange City, Iowa; State University of Iowa College of Medicine, Iowa City, 1925; member of the American Academy of General Practice; died in the Methodist Hospital, Sioux City, Sept. 15, aged 55, of arteriosclerotic heart disease.

Dorsey, Francis Patrick Sr. ✠ Omaha; University of Louisville (Ky.) Medical Department, 1895; served during World War I; died in St. Catherine's Hospital Aug. 26, aged 86, of bronchopneumonia and coronary sclerosis.

Field, George Alfred ✠ Scarsdale, N. Y.; Trinity Medical College, Toronto, Canada, 1898; member of the Iowa State Medical Society; fellow of the American College of Surgeons; formerly on the staff of the Iowa Methodist Hospital and Lutheran Hospital in Des Moines; died Sept. 18, aged 81, of carcinoma.

Frederick, Rivers, New Orleans; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1897; president and one of the founders of the Louisiana Life Insurance Company; recipient of numerous awards and honors from groups both here and abroad; for many years surgeon of the Southern Pacific Railroad; chief emeritus and consultant in surgery at Flint Goodridge Hospital, where from 1932 to 1953 he was chief of surgery, and where he died Sept. 2, aged 80, of coronary occlusion.

Gaston, John N. ✠ Edgmoor, S. C.; Medical College of the State of South Carolina, Charleston, 1899; died in Rock Hill Sept. 20, aged 82, of uremia.

Heaney, Harry Gilbert ✠ Corpus Christi, Texas; University of the South Medical Department, Sewanee, Tenn., 1901; fellow of the American College of Surgeons; served as city commissioner; president of the Rotary Club, of which he was a charter member; died July 3, aged 76, of hypostatic bronchopneumonia.

Horn, William H. ✠ Magnolia, Ark.; Gate City Medical College, Texarkana, Ark., 1905; died in the City Hospital Sept. 14, aged 85, of cerebral hemorrhage.

Jones, William Edgar ✠ Texarkana, Texas; University of Texas School of Medicine, Galveston, 1938; specialist certified by the American Board of Internal Medicine; assistant clinical professor of medicine at University of Arkansas School of Medicine in Little Rock; served during World War II; died July 3, aged 40.

Kenan, James ✠ Selma, Ala.; University of Virginia Department of Medicine, Charlottesville, 1897; fellow of the American College of Surgeons; affiliated with the Alabama Baptist Hospital; died Aug. 12, aged 79.

Leach, Paul Hartsock ✠ Lieutenant Colonel, U. S. Army, retired, Los Angeles; College of Medical Evangelists, Loma Linda and Los Angeles, 1931; entered the regular Army Jan. 29, 1936, as a first lieutenant; served during World War II; became a lieutenant colonel Aug. 10, 1948; retired Sept. 30, 1949, for disability in line of duty; died Sept. 28, aged 50, of thrombosis of the portal vein and adenocarcinoma of the colon.

Lewis, Charles Kelley ✠ Memphis, Tenn.; University of Tennessee College of Medicine, Memphis, 1924; associate professor of otology, laryngology, and rhinology at his alma mater; specialist certified by the American Board of Otolaryngology; member of the American Academy of Ophthalmology and Otolaryngology; served during World War II; affiliated with the John Gaston and St. Joseph hospitals; on the attending staff at Methodist Hospital, where he died Aug. 26, aged 55.

McDougal, Alex Carmack, Morris Chapel, Tenn.; University of Tennessee College of Medicine, Memphis, 1929; died Aug. 2, aged 53, of a heart attack.

McKnight, John Forrest ✠ Bradley, Ark.; Medical Department of Tulane University of Louisiana, New Orleans, 1892; for 44 years president of the Walnut Hill (Ark.) Telephone Company; died Aug. 21, aged 91.

Matson, James Rutherford ✠ San Diego, Calif.; Ohio State University College of Medicine, Columbus, 1933; certified by the National Board of Medical Examiners; served during World War II; affiliated with Mercy, Quintard, and Balboa hospitals; died Sept. 29, aged 46, of coronary thrombosis.

Olsson, Olof, Chicago; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1905; died Oct. 15, aged 88, of gastrointestinal hemorrhage and acute monocytic leukemia.

Opp, Paul Alfred, Los Angeles; College of Physicians and Surgeons, Los Angeles, 1908; died Oct. 5, aged 75.

Packard, Harry Phineas, Colorado Springs, Colo.; Denver College of Medicine, 1901; fellow of the American College of Surgeons; medical missionary in Persia for many years and for two years medical attaché at the U. S. Embassy in Teheran; died in Duarte, Calif., Oct. 3, aged 79, of coronary occlusion.

Palevich, Matthew Dominic ✠ Detroit; Dalhousie University Faculty of Medicine, Halifax, Nova Scotia, Canada, 1926; examiner for the Selective Service; on the staff of the Detroit Memorial Hospital; died Oct. 4, aged 67, of coronary occlusion.

Perry, William J. ✠ Chesterfield, S. C.; Atlanta College of Physicians and Surgeons, 1900; served as a member and as chairman of the school board, a legislator from Chesterfield County from 1934 to 1941, and for four years state senator; died Aug. 28, aged 76, of cerebral thrombosis.

Phelps, Gouverneur Morris ✠ South Ashfield, Mass.; Columbia University College of Physicians and Surgeons, New York, 1907; member of the Medical Society of the State of New York; fellow of the American College of Surgeons; formerly practiced in New York City, where he was for many years associated with the Roosevelt and Manhattan Eye and Ear hospitals, died Oct. 18, aged 74.

Ream, Charles E., Bowersville, Ohio; Eclectic Medical Institute, Cincinnati, 1894; past president of the Greene County Medical Society; died Sept. 12, aged 87.

Reuss, Harry Pierce ✠ Granite City, Ill.; Washington University School of Medicine, St. Louis, 1910; fellow of the American College of Surgeons; on the staff of St. Elizabeth Hospital; died in Barnes Hospital, St. Louis, Oct. 9, aged 66, of cancer.

Rijhoff, Victor Egnatie ✠ San Francisco; St. Louis University School of Medicine, 1933; served during World War II; on the staff of St. Francis Hospital, where he died Sept. 22, aged 52, of carcinoma of the stomach.

Ruth, Roy Frederick ✠ Woodlake, Calif.; College of Physicians and Surgeons, medical department of the University of Southern California, Los Angeles, 1917; affiliated with Sequoia Hospital, where he died Sept. 11, aged 61, of pulmonary embolism.

Sand, Olaf ✠ Fargo, N. D.; Kongelige Frederiks Universitet Medisinske Fakultet, Oslo, Norway, 1897; one of the founders of the Fargo Clinic and of St. Luke's Hospital; died Sept. 28, aged 83.

Savetsky, Jonathan Morris ✠ New York City; Université de Lausanne Faculté de Médècine, Switzerland, 1939; died Aug. 10, aged 43.

Senter, Eugene William ✠ Salem, Va.; Medical College of Virginia, Richmond, 1932; first full time city physician in Roanoke; served as Roanoke College physician; died Sept. 20, aged 48, of coronary thrombosis.

Shirley, George Horatio, Eugene, Mo.; American Medical College, St. Louis, 1911; died in St. Mary's Hospital, Jefferson City, Sept. 20, aged 65, of duodenal ulcer.

Spaulding, William ✠ Poplar Bluff, Mo.; Indiana Medical College, School of Medicine of Purdue University, Indianapolis, 1906; formerly member of the school board; past president of the Butler County Medical Association; died in the Doctors Hospital Sept. 16, aged 72, of Parkinson's disease.

Stuch, Howard Taylor, Allegan, Mich.; Cornell University Medical College, New York City, 1934; served during World War II; died in Mackinaw City Sept. 27, aged 47, of coronary occlusion.

Swerlick, Robert, Philadelphia; Hahnemann Medical College and Hospital of Philadelphia, 1954; intern at the Hahnemann Medical College and Hospital, where he died Sept. 25, aged 28, of choriocarcinoma.

Taylor, Roy Ferdinand, Santa Monica, Calif.; St. Louis University School of Medicine, 1934; served during World War II; formerly affiliated with the Veterans Administration Hospital in New York City; died Oct. 1, aged 49, of heart disease.

Thompson, James Brown, Livonia, Mich.; Long Island College Hospital, Brooklyn, 1902; served in France during World War I; died in Sessions Hospital, Northville, Aug. 15, aged 76, of hypertensive heart disease.

Vance, James Glenn ✠ Birmingham, Ala.; Birmingham Medical College, 1905; affiliated with the Crippled Children's Hospital; died Oct. 11, aged 73, of coronary occlusion.

Villareal, Andres, El Paso, Texas; Universidad Nacional Facultad de Medicine, Mexico, D. F., 1899; died Sept. 7, aged 76, of acute pulmonary edema.

Voisinet, Raymond Austin ✠ Union City, Ind.; Fordham University School of Medicine, New York, 1915; served in France during World War I; member of the American Association of Railway Surgeons; for many years served as physician and surgeon for the New York Central and Pennsylvania Railroad; died Oct. 18, aged 62, of a heart attack.

Wagner, Earl Eulearn ✠ Wilkes-Barre, Pa.; Jefferson Medical College of Philadelphia, 1897; an Associate Fellow of the American Medical Association; chairman of the board of Hanover National Bank; died Aug. 25, aged 80, of acute myocardial infarction.

Wall, Dick Parker ✠ Galveston, Texas; University of Texas School of Medicine, Galveston, 1913; past president of the Galveston County Medical Society; formerly professor of otorhinolaryngology at his alma mater; member of the Association of Life Insurance Medical Directors of America; for many years medical director of the American National Insurance Company; affiliated with U. S. Public Health Service Hospital; died July 18, aged 69, of emphysema.

Ward, Harry H. ✠ Coalmont, Ind.; Louisville (Ky.) Medical College, 1898; past president of the fifth district of the Indiana State Medical Association; died Sept. 19, aged 80, of coronary disease.

Watson, Rudolph Burney, St. Petersburg, Fla.; Vanderbilt University School of Medicine, Nashville, Tenn., 1910; served in the Isthmian Canal Commission under Colonel Gorgas; served in World War I; died in the Veterans Administration Hospital, Martinsburg, W. Va., Oct. 15, aged 68, of lobar pneumonia.

Whitcomb, Orin John ✠ Raton, N. M.; Northwestern University Medical School, Chicago, 1904; affiliated with the New Mexico Miners' Hospital; died in Cushing, Okla., Oct. 11, aged 79, of coronary occlusion.

Whiting, Leonard Clarke ✠ New Haven, Conn.; Maryland Medical College, Baltimore, 1912; assistant clinical professor of ophthalmology at Yale University School of Medicine; on the staff of the Grace New Haven Community Hospital, where he died Sept. 25, aged 66.

Williams, John Powell ✠ Richmond, Va.; University of Virginia Department of Medicine, Charlottesville, 1923; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; professor of clinical medicine at the Medical College of Virginia; served during World Wars I and II; past president and chairman of the board of trustees of the Richmond Academy of Medicine; for many years affiliated with the Veterans Administration Hospital; died in the Medical College of Virginia Hospital Sept. 1, aged 59.

Williams, John Robert, Kansas City, Mo.; University of West Tennessee College of Medicine and Surgery, Memphis, 1913; died Sept. 28, aged 67, of chronic hepatitis.

Williams, Rasmus V. ✠ Rushford, Minn.; Bennett Medical College, Chicago, 1901; Northwestern University Medical School, Chicago, 1903; past president and vice-president of the Southern Minnesota Medical Association; served as health officer and on the school board; died in the Methodist Hospital Sept. 15, aged 77, of myocardial infarction.

Wilson, Newton Graves ✠ Orange Lake, Fla.; North Carolina Medical College, Charlotte, 1914; died Aug. 14, aged 78.

Wolfe, Otis Rudolph ✠ Marshalltown, Iowa; University Medical College of Kansas City, Mo., 1910; member of the American Academy of Ophthalmology and Otolaryngology, Association for Research in Ophthalmology, and the International College of Surgeons; chief eye surgeon of the Wolfe Eye Clinic and of Evangelical Deaconess Home and Hospital; died in St. Mary's Hospital, Rochester, Minn., Sept. 11, aged 68, of uremia and congestive heart failure.

Wrensch, Alexander Eugene ✠ Caldwell, N. J.; Maryland Medical College, Baltimore, 1901; also a graduate in pharmacy; an Associate Fellow of the American Medical Association; for many years on the staff of the Mountainside Hospital in Montclair; died Sept. 22, aged 78, of cerebral vascular accident.

Young, Walter Harding ✠ Dedham, Mass.; Tufts College Medical School, Boston, 1907; an Associate Fellow of the American Medical Association; formerly affiliated with Massachusetts Eye and Ear Infirmary and Faulkner Hospital in Boston, Norwood (Mass.) Hospital, and Newton-Wellesley Hospital in Newton Lower Falls; died in Medfield Sept. 18, aged 77, of arteriosclerosis.

FOREIGN LETTERS

ENGLAND

Fluoridation of Water.—Following the recommendations of a United Kingdom mission that visited the United States in 1952 to study the problem of fluoridation of domestic water supplies, four areas in the British Isles have decided to add fluorides to the public water supply. The necessary apparatus has been ordered from the United States, and within a year the scheme should be well under way. The mission examined the evidence, to which more has been added since 1952, showing that dental caries is less prevalent in areas where the drinking water has a fluorine content of 1 ppm or more than in those where the water is practically fluorine free. Several British surveys conducted during the last six years have confirmed the American work on the subject. A reduction in dental caries to the level found in persons living in high fluorine areas in the country is expected. The possible hazards of continuously ingesting water fluoridated to the level of 1 ppm have been carefully considered by the United Kingdom mission, which considers that there is no danger to health. The difficulty of introducing such public health measures in a democratic country is the element of "compulsion" that must need be enforced. Some persons will genuinely believe that their bodily ailments are due to drinking fluoridated water and will seek the advice of their family physicians about it. This has already happened in some areas.

Medical Recruitment in the Armed Forces.—The Council of the British Medical Association has made its report to the Government's Forces Medical and Dental Services Committee, which was set up under the chairmanship of Lord Waverly to review the arrangements for providing medical and dental services for the armed forces. The council concluded that the situation is little short of desperate and that many changes are required if a career in the services is to be made attractive to young physicians. The shortage of regular service medical officers today is more serious than ever before, the armed forces being dependent on physicians inducted for National Service to fill their establishments. The problems to be solved are: (1) to get physicians into the armed forces, (2) to persuade them to remain there, and (3) to make the best use of them. The British Medical Association council goes on to offer its solutions to these problems.

There is no shortage of general duty medical officers, because these are provided by physicians inducted for service, but there is a great shortage of specialists. The council suggests that to help this a scheme could be devised by which a physician's liability to conscription in the forces could be extended to the age of 35 at his own request on condition his recruitment would be deferred so that he could first get specialist training. As sex discrimination in the medical profession has been abolished it is suggested that female physicians should be conscripted into the forces in the same way as men. Until a full and satisfying career can be offered, comparing favorably both clinically and financially with medical careers in civil life, the medical branches of the armed forces will remain short of regular medical officers. In 1950 the British Medical Association pointed out to the Ministry of Defense the disadvantages of service life. The following disadvantages were discussed with the Ministry: the additional cost of educating children, and separation from them; separation from relations and home surroundings; professional isolation; lack of amenities, arduous climate, and high cost of living in many stations abroad; and the expense of frequent removals. The Ministry of Defense thought that 8 to 10% added to the civilian medical officer's remuneration would be sufficient to induce recruitment, but it did not.

The Council of the British Medical Association believes that medical men can only be attracted to the forces by increasing the existing pay of both specialist and nonspecialist medical officers. It proposes that the remuneration of a senior specialist in the forces should be the same as that of a consultant in civil life. Specialist pay in the Air Force is particularly anomalous, the existing arrangement being that the medical specialist in the R. A. F. is rewarded by accelerated promotion. An additional inducement would be a substantial allowance for each child while the father is overseas to offset the cost of education; free travel once a year would enable families to be with their father overseas. Income tax relief might help overseas medical officers, who do not enjoy all the amenities of the welfare state while out of the country, although at present they contribute to them in taxation.

The council thinks that a medical officer should be reasonably certain of promotion to the rank of lieutenant colonel and colonel after 17 and 23 years' service, respectively, and it should be possible for an outstanding officer to obtain accelerated promotion. The council dislikes the device introduced in 1950 of awarding seniority to new entrants in consideration of civil experience. This should be restricted as a short-term measure to encourage recruitment in the specialist field only. The introduction of high retiring ages is likely to block promotion and leave the forces in time of emergency with a number of officers who, although medically competent, would not be physically effective.

Medical recruits of a high standard can only be attracted to the forces permanently if postgraduate study is permitted and is available as it is in civil life, e. g., in university courses and fellowships for study and research. It is not too much to expect that all officers should take a postgraduate course at least once every three years. Since service hospitals rarely have the facilities for specialist experience the council suggests that some honorary appointments in civil hospitals should be available for trainee specialists. Many young physicians called to the forces for national service have or develop an antipathy to service life, and this attitude is not improved by paying them less than those of equal rank who intend staying in the forces for a number of years.

Medical manpower could be saved in peacetime by permitting small units, e. g., a battalion of 1,000 men, to dispense with a full-time medical officer by sharing with another unit or by using the services of local general practitioners. In wartime one medical officer per battalion is essential for morale. Evacuation of casualties could be entrusted to nonmedical officers, but the preventive medicine services, which are so important in peace and war, could not be handled by the medically unqualified. The council does not think that the forces at home should rely on the National Health Service for hospital treatment, as this would make the service specialist redundant and would be the first step to making good medical treatment an overseas service only. Nevertheless, the council thinks the collaboration between service and civilian hospitals should be increased.

Science Meeting at Oxford.—The British Association for the Advancement of Science held its 16th annual meeting at Oxford in September. In his presidential address Prof. E. D. Adrian spoke on the terrors of the hydrogen bomb and said that man's capacity to destroy himself and his neighbors has far outstripped his understanding of why he should want to do so. He stated that the next big scientific advance would come from the study of human behavior. The fields opened up by Pavlov and Freud are awaiting development, and the gap between physiology and psychology is being steadily narrowed. In a discussion on obesity Dr. J. M. Tanner said the overweight must be distinguished not only from overfat but also from the general quantity of fat in a person and the fat content of a fat cell. He used the word lipoplethory to indicate the relative fulness of cells with fat. Only those subjects that are relatively highly endomorphic can produce a sufficiently high percentage of bodily fat to be called obese. Serum cholesterol concentration may be more closely related to lipoplethory than to body fat. Patients with many-fat cells, rather than those with a high percentage of body fat, are the ones who needed to diet. Prof. Jean Mayer of Harvard described the

The items in these letters are contributed by regular correspondents in the various foreign countries.

mating of a waltzing mouse with a genetically obese mouse to produce a waltzing obese mouse, which, however, put on only one-sixth of the weight of an ordinary obese mouse. An obese mouse, given an hour's work a day on a treadmill, halved its gain in weight. Excessive exercise, however, caused greater appetite and an increase in weight. Exercise is necessary for weight reduction, but if excessive it defeats its object.

Prof. L. S. Penrose of London, in a session on genetics, questioned the view that behind a facade of human progress owing to advances in hygiene, medicine, and nutrition the race is deteriorating physically and mentally because of the preservation of hereditary weaknesses. Genes may be unfavorable under one condition and not under others. It is therefore wrong to attempt to eliminate particular genes unless they do more harm than good in the long run; on general principles genetic variety is advantageous. Knowledge of inherited biochemical constitution based on genetics and knowledge of the genetics of pathogens should be useful in the conquest of disease. In the section on tropical medicine Prof. R. M. Gordon and Dr. W. S. Kershaw of Liverpool described recent investigations on the natural history of loaiasis, which results from infection with the filarial parasite Loa loa. This is transmitted to man by biting flies of the genus Chrysops, which were thought to be most numerous in the cleared areas surrounding small villages in the tropical rain forests. Work done in the British Cameroons has shown that these flies extend far beyond the villages. By the use of observation platforms built to a height of 80 to 120 ft. above the forest it has been shown that loaiasis was not solely a human infection but also occurrs in the monkeys of the forest, who might form a reservoir of infection.

Dr. J. C. Raven of Dumfries, Scotland, in a discussion of hallucinations said that it was impossible to dismiss hallucinations as "morbid imaginations" or "distortions of fact." If hallucinations are arranged from the frankly morbid to the obviously healthy certain similarities and differences between them can be found. Generally speaking, hallucinations arise during tension or when a personal problem needs to be solved. Whereas in the mentally ill they manifest themselves as fixed, fragmented, or encapsulated ideas beyond the person's control or understanding and often appeared harmful, those experienced by the mentally normal tend to be mobile and appropriate. They appear to be related to past and present experiences and to the conduct of others. They express a sympathetic responsiveness, and the subject experiencing them is generally conscious of the role he plays in apprehending and interpreting what has been experienced. Only as recognition is given to the subjective nature of experience and personality as something essentially experienced in human relationships is it likely that the context of hallucinations will be understood or any satisfactory concept of mind be formed.

Galactosemia.—Six cases of the rare disease of galactosemia—only 25 proved cases have been reported in the literature to date—are recorded by Dr. P. J. N. Cox of London and Dr. R. J. Pugh of Leeds (*Brit. M. J.* **2**:613, 1954). Children with galactosemia, a congenital error of metabolism, are unable from birth to metabolize galactose, which accumulates in the blood and causes liver enlargement, jaundice, aminoaciduria, and early death. Survivors are mentally deficient and cataracts develop. The condition is probably due to lack of specific enzymes involved in galactose metabolism. With early treatment life can sometimes be saved and a normal child may develop. Three of Cox and Pugh's cases occurred in the same family and two in another. This familial incidence is also noted in other cases reported. Cox and Pugh found that galactose was best detected in the urine by paper chromatography rather than by purely chemical methods, which are tedious and uncertain. They state that the condition, although rare, should be suspected in older children suffering from mental defect associated with cataract or liver disease. If they are no longer on a milk diet galactosuria may be slight and intermittent, in which case a galactose tolerance test should be performed. The cases, which were all diagnosed within the first few weeks of life, were treated by excluding lactose and galactose from the diet, which meant feeding with a lactose-free food that looks like milk. This was made from Casilan, a caslin digest, mixed with coconut oil, arachis oil, sucrose, and water. Butter was omitted from the diet, as it contains small amounts of lactose. As Casilan is deficient in vitamins, potassium, sodium, and iron these were added to the diet. Soya milk contains carbohydrates with galactose in the molecule and was therefore unsuitable. With the utmost care it was found impossible to exclude all traces of lactose from the diet, and only three patients showed any improvement, the other three infants dying from the disease. Of the survivors one made good progress, although handicapped by bilateral cataract, but the remaining two relapsed and died in a few weeks. Cox and Pugh think that if they could have seen the patients earlier and vigorously excluded all traces of lactose from the diet there would have been more survivals.

Another case of galactosemia in Britain has been reported by Dr. W. M. Arthurton and Dr. B. W. Meade (*Brit. M. J.* **2**:618, 1954). A synthetic diet similar to that given by Cox and Pugh was given to the child, a 4-week-old infant. In addition the diet contained arrowroot and Dextrimaltose. The child survived, although with cataracts and mental retardation. After discharge from hospital the synthetic diet was replaced by Nutramigen, a hypoallergenic formula for infants.

Use of Meparfynol in Labor.—Meparfynol, a recently introduced sedative, has been used by Dr. Gordon Bourne to calm and relax nervous patients in labor (*Lancet*, **2**:522 [Sept. 11] 1954). This drug is of interest as it is not a barbiturate. It is a simple, unsaturated aliphatic carbinol of low toxicity with a hypnotic action of short duration and is devoid of anesthetic, analgesic, or spasmolytic activity. The drug was given as an elixir in doses of 0.5 gm. to 1 gm. at intervals of not less than three hours to 220 women in labor. For controls 100 others were given a mixture containing 2 gm. of chloral hydrate, 2 gm. of potassium bromide, and 1 cc. of tincture of opium. Analgesics were not withheld if the patient demanded them or if the staff thought they were necessary. A dose of 1 gm. of the new drug acted as a mild sedative and had a pronounced action in removing fear and allaying apprehension. The action was most obvious in primiparas and when the drug was given early in labor. It was noted that a remarkable ability to relax often accompanied the diminution of apprehension in the patients during labor. Meparfynol was given in the second stage, when apprehension often caused difficulty in management. There was no evidence that the drug had any effect on the duration of labor, but the blood loss and the occurrence of postpartum hemorrhage appeared to be high. No other ill effects were observed in mother or baby. There was no respiratory depression in the newborn. In some patients an unusual degree of amnesia for the events of labor was noted. When given early in labor the drug established a degree of confidence and cooperation that continued for a long time. The effect of meparfynol was less dramatic, although still quite evident, if given when labor was well established. It was found particularly effective in patients admitted to hospital as an obstetric emergency, as they were apprehensive. The drug was less helpful in patients that had been in labor for over 24 hours, when the patient's fear was often greater than usual.

Nitrous oxide and oxygen analgesia and merperidine hydrochloride were administered when necessary. Care was taken not to give large doses of meparfynol at or near the onset of the second stage of labor, because it might induce sleep or make the patient relax so much that she could not use her uterine contractions fully. This would then lengthen the second stage. Bourne concluded that meparfynol is useful in labor because it reduces fear, allays apprehension, and improves the patient's cooperation.

Physician Legally Liable for His Deputy.—The death of prematurely born twins in the West County has been the subject of a report by the Medical Services Committee of the Devon and Exeter Executive Council. A health visitor called to see ailing twins 5 weeks old and decided the services of a physician were required. She called at the house of the family physician with whom the twins were registered under the National Health Service, but he was away and his deputy was seen instead. From a description of the illness he decided that no visit was necessary and gave a prescription. The infants became worse the next day. The deputy called, found them very ill, and ordered them to

the hospital where they died the next day. The committee concluded that the deputy made an error of judgment in not seeing the infants in the first instance, but the responsibility was placed on the family physician, who, although not present, was held to be responsible for all acts and omissions of any practitioner acting as his deputy in relation to his obligations under the National Health Service. Although this practitioner-deputy relationship is laid down in paragraph 8(8) of Terms of Service for Medical Practitioners in the National Health Service, this case has aroused a storm of protest. It is argued that if a person is medically qualified and registered he or she is recognized as competent to be given charge of patients and to take responsibility. Once a practitioner seeking a deputy has satisfied himself that he or she is competent and is a member of a medical defense union it is anomalous and unfair that he should thereafter find himself liable to criticism or legal action for his deputy's shortcomings.

Thyroid Function.—At the joint meeting of the Association of Clinical Pathologists and the Association of Clinical Biochemists held in October, Prof. E. J. Wayne of Glasgow University said that he determined the thyroid uptake of radioactive iodine (I^{131}) four hours and the plasma protein-bound activity 48 hours after giving a dose. He said that the latter test was useful in confirming the diagnosis of hyperthyroidism. Measurement of the urinary excretion of I^{131} is an aid in the diagnosis of hypothyroidism. Prof. N. F. Maclagan and Dr. B. W. Meade reviewed the results of 500 patients in whom the I^{131} thigh-neck clearance test was used. There was a discrepancy between the results of this test and the clinical diagnosis in only 40 patients. Dr. F. Brown and Dr. H. Jackson described the results of treating carcinoma of the thyroid with I^{131}. They found that the plasma of patients so treated contained thyroid protein as well as thyroxine and in some it also contained diiodotyrosine. They observed that the metabolism of thyroid protein shows a species specificity. Thus rats cannot metabolize canine thyroid protein. Dr. A. Tickner said that he found the serum cholinesterase high in patients with thyrotoxicosis and low in those with myxedema, although there was some overlap. As the liver was the source of cholinesterase, he thought that the cholinesterase level was a measure of liver function in thyrotoxicosis. Dr. I. C. Gilliland found that the plasma level of thyroid-stimulating hormone high in patients with myxedema and low in those with thyrotoxicosis, unless ocular signs were present, in which case it was raised. There was no increase in the thyroid-stimulating hormone in exophthalmos without thyroid involvement. The diagnostic value of a number of conventional tests in thyroid disease was examined by Dr. A. L. Tarnoky and Dr. P. White. A highly significant correlation with clinical diagnosis was found in the following tests: the basal metabolic rate, the serum cholesterol level, and the urinary pigment–creatinine ratio.

International Congress of Midwives.—The Congress of the International Federation of Midwives was opened in London on Sept. 6 by the Minister of Health, who referred to some of the advantages of childbirth at home with the help of the midwife and family physician. Over 700 midwives from 46 different countries attended the congress. Twenty-eight countries with a midwives' organization sent delegates, some of whom traveled from as far as Hong Kong and Formosa. Only the Soviet Union and Czechoslovakia refused an invitation to attend the congress. After the official opening by the Minister of Health, Prof. N. J. Eastman of the Johns Hopkins University School of Medicine, Baltimore, gave an address entitled "The Midwife and World Health."

Cancer of the Lung.—According to the 1953 report of the medical officer of health for Birmingham the rapid increase of male deaths due to malignant disease of the respiratory system has reached almost epidemic proportions. In 1953 the condition was responsible for 507 deaths in Birmingham (433 men and 74 women), thus accounting for 7.02% of all deaths of men and 1.29% of all deaths of women. In 1947 the total deaths were 320 (255 men and 65 women). In six years the increase of cancer of the respiratory system in men has increased by 70% but in women only 14%. The standardized mortality rates from the disease are closely related to the number of inhabited dwellings in the area.

FINLAND

Complications Following Ocular Operations.—Vartiainen, Vannas, and Haapanen have studied the incidence of internal complications in patients operated on for cataract and for detachment of the retina, in order to determine the risk connected with these operations and to ascertain the effect of prolonged bed rest on patients of the older age groups. The series comprised a total of 1,235 patients with cataract and 115 with detached retinas, their ages varying between 40 and 90 years (*Ann. med. int. Fenniae* **43:**120-132, 1954). The incidence of internal complications in connection with these operations was low. The most frequent was pulmonary infection developing from hypostasis, which was seen in 27 of the patients with cataract and 6 of those with detached retinas. Four patients with cataract and one with a detached retina had thromboembolic complications. Most of the complications healed quickly, but two pulmonary complications and one embolism resulted in death. In addition, there were three sudden cardiac deaths. The aggregate mortality of the two groups, therefore, was 0.4%. The predisposing factors with pulmonary complications seemed to be emphysema and diseases of the circulatory system. The principal factors leading to thromboembolic complications were heart diseases and arteriosclerosis. Age is no direct contraindication of these eye operations.

Anoptral Contrast Microscope.—At the Scandinavian Physiological Congress in August in Helsinki, Prof. Alvar Wilska described the anoptral (nonreflecting) contrast microscope developed by him. He reported that, with annularly defined zones made of soot instead of conventional phase rings and larger than usual ring apertures, much better contrast and resolving power can be obtained than with the ordinary phase contrast. For highly refractile objects, Professor Wilska's first method is to be recommended. In this the absorption of the soot layer with a ring-shaped transparent area is relatively small. The image is similar to that of the normal "positive" phase contrast but without halos. In the second method, called anoptral contrast by its manufacturer, the Optische Werke C. Reichert A. G. of Vienna, the transparency of the soot ring is particularly small. The image becomes "negative" in the ordinary sense. Physiologically, however, it is much more natural than the "positive" one because the halos unavoidable in the latter are converted into shadow borders, giving the image an illusion of depth. In addition to this, the gold-brown tint of the anoptral image is agreeable to the eye (*Mikroskopie,* vol. 9, no. 1-4, 1954).

Degenerative Changes in the Spine and Back Pain.—O. Biström (*Ann. chir. et gynaec. Fenniae* **43:**29-44, 1954) studied the roentgenograms of the lumbar spine of 151 patients, none of whom had any painful back symptoms. They were specially examined for degenerative changes, and almost all degrees were present without causing pain. Only 29 had no degenerative changes visible on roentgenograms. Most of the patients were manual workers. Deforming spondylosis was clearly related to age. No patients were completely free of osteophytes in the higher age groups, and the degenerative changes were often quite distinct. Also, disk degeneration was distinct in 26% of the patients. Various degrees of osteoporosis were observed in most of the elderly patients. The changes were more pronounced in the women. The author concluded that routine roentgenograms were of little importance in the evaluation of back pain.

Extrauterine Pregnancy.—According to Järvinen and Franzas (*Nord. med.* **42:**1438, 1954) the rate of extrauterine pregnancy has increased during the penicillin era. The records from the period 1945-1953 of Women's Clinics 1 and 2, University of Helsinki, were examined in order to ascertain whether any change had occurred in the incidence of extrauterine pregnancy since 1949, when the use of penicillin and other antibiotics was adopted in the treatment of genital infection. During the period in question 1,158 women underwent operations for extrauterine pregnancy. The total number of live births in the area served by these clinics was taken for comparison. It was found that the rate of extrauterine pregnancy had increased by 20%. Prior to the extrauterine pregnancy, 60% of the patients had received penicillin or some other antibiotic because of genital infection.

GERMANY

Sick Funds and Social Security.—A book entitled "Die Arztfrage in der deutschen Sozialversicherung" (The Medical Problem of German Social Insurance), just published by Duncker and Humblot, Berlin, deals with the history and the present state of German sick-fund practice. The author, Dr. Julius Hadrich, stresses that today most German employees could not afford private medical consultation and treatment unless wages were doubled. German sick-funds were created in 1882 to help the totally disabled employee. The Reichstag, however, at once extended the project to include those with acute diseases. Even at the beginning almost 50% of the income of these funds was consumed by administrative expenses and expenses other than the physicians' bills. The physicians' share fell from about 45% at the end of the 19th century to 42.24% in 1925, and has now decreased to about 21%. In 1930, by a stroke of the pen, the families of insured persons were included, thus adding 18 million members to the health insurance plan without any increase in income. Assistance for pregnant women too was transferred to the funds without additional fee. War veterans had to be cared for, and even first-aid treatment after accidents became a responsibility of the funds.

In 1941 all restrictions based on income were withdrawn from the terms of membership. In 1942 the fees for sick-funds, pensions, and unemployment insurance were lumped together. The health insurance plan then had to abandon individualized fees, and an unsocial scheme of shares was introduced. Today employees often confuse the whole fee with the sick-fund's share, thus overestimating the value of their health insurance. The funds, long since overloaded, have tried to cut down the payments to physicians more and more. Dr. Hadrich concluded that the sick funds now are the "maid of all work." The real cause of the trouble is the fear of all political parties of demanding more money from the beneficiaries. According to *Deutsche Aerztetag*, the present difficulties can only be relieved by permitting the benefits of voluntary insurance to low income groups.

Obstetrics in Germany.—Prof. Heinrich Martius, leading German gynecologist and obstetrician, retired from Göttingen University in August. On this occasion he reported the results of his 28 years in the gynecologic department. In 38,375 deliveries the maternal death rate was 0.29%. Divided into five-year periods the maternal death rate fell from 0.92% in the period 1926 to 1930 to 0.087% in the period 1951 to 1953. In the same period the perinatal death rate, including the first 10 days of life, fell from 8.72% to 5.03%. The number of surgical deliveries, compared to the maternal and the newborn infant death rate indicates the level of the art of obstetrics. If forceps delivery reaches 25% and hysterectomy 10%, obstetric work becomes a crude handicraft. At Göttingen high forceps operations fell from 2% in the period 1926 to 1931 to almost none in the period 1951 to 1953; low forceps and mid-forceps operations, however, reached 6.25% in the period 1951 to 1953, as low forceps operations increased somewhat during the last years. Cesarean section declined from 4.8% in the period 1931 to 1935 to 2.2% in the period 1941 to 1943, but rose to 3.5% in the period 1951 to 1953, the increase being due to such new indications as maternal diabetes and Rh incompatibility. The slight increase in cesarean sections did not increase the surgical deliveries as a whole, because these operations were counterbalanced by an increase in normal deliveries.

"Fresh Cell" Therapy.—Since 1948, Dr. P. Niehans, a Swiss surgeon, has injected particles taken from certain fetal tissues of animals as a therapeutic measure. Niehans, being interested in the old Steinach-Voronoff theories, decided to enlarge the surface of transplants in order to prevent destruction by anoxia and malnutrition. Thus thin slides of animal tissues are reduced to small particles and injected. This simple method, though lacking experimental confirmation, is applied to endocrine diseases, nephrosis, and different kinds of carcinoma. Brucellosis and encephalomyelitis developed in some patients treated with "fresh cells," as reported by Professor Bennhold of the University of Tuebingen Medical School at a meeting of the Society of Internal Medicine of Northwest Germany in May. These complications seem to be transmitted by "fresh cells" from an infected fetus (*Deutsche med. Wchnschr.* **79**:704, 1954).

PERU

Gastric Cancer.—Dr. Luis Carrillo Maúrtua (*Archivos peruanos de patologia y clinica*, vol. 8, no. 2, June, 1954) discussed the three aims recommended by Gasset Jean for improving the surgical treatment of gastric cancer. Realization of the first, reducing the proportion of inoperable cases, depends on an early diagnosis. According to Gutmann all gastric cancers evolve slowly during the first phase, which generally lasts months or years. During this time there may be symptomatic and radiological manifestations that should be carefully looked for in every patient with a gastric complaint. In this stage, when the lesion is small and no metastases have occurred, most patients can be cured by means of a subtotal gastrectomy. Lambling, however, maintains that only 20% of gastric cancers follow such a course and that the rest do not have this early period of slow growth or, if they do, it is short. He believes that most gastric cancers grow rapidly and that, no matter how early the diagnosis is made, the surgeon will find a well-advanced and infiltrating tumor. Dr. Carillo believes that the diagnosis of incipient gastric cancer is possible and that all patients with gastric disturbances should be assumed to have cancer until it has been definitely ruled out. Realization of the second aim, to reduce operative mortality, depends on preoperative and postoperative treatment. The use of artificial hibernation following the methods of Laboritt and Huguenard appears to lower the operative risk, especially when total and subtotal gastrectomy is performed. The third aim is to reduce the number of metastases and relapses. Two of the causes of the frequent failure of subtotal gastrectomy are relapse of the cancer at the stumps and local metastasis in the gastric bed. Total gastrectomy usually offers better results. At the same time, the spleen, the tail of the pancreas, and the regional lymph nodes should be removed. The author concludes that most gastric ulcers should be surgically removed.

Adrenal Stimulation.—Dr. J. L. Brener Cuker and his coworkers of the medical clinic of the Medical School of Lima and of the Instituto de Biología Andina have studied the variations in the circulating eosinophils associated with acute anoxia in 26 physicians and medical students aged 22 to 32 years to determine to what extent this emergency state stimulates the adrenal glands. None of the subjects had gone more than 1,000 m. above sea level within 12 months before the experiment was started. All were subjected to a clinical examination and were found normal except one whose serologic tests (Kahn, Mazzini, and cardiolipin) were positive. The subjects were taken up to Morococha at an altitude of 4,580 m. Two hours after arrival oxygen saturation of the arterial blood was 78.9%. Two hours later eosinophil counts were made by Thorn's method. The results were compared with the values obtained in the same subjects at sea level. The authors concluded that in most cases (1) the persons subjected to acute anoxia showed a drop in the circulating eosinophils, such as might be provoked by stimulating the adrenal glands, and (2) the more acute the eosinopenia, the more intense was the mountain sickness suffered by the subjects. The fall in the circulating eosinophils appeared to vary directly with the intensity of the anoxia. It is not known how the low oxygen content of the air stimulates the hypophysoadrenal chain. It seems that for its realization the hypothalamic-hypophyseal nervous pathways are not indispensable. This work was reported in *Anales de la Facultad de medicina, Lima* (vol. 37, no. 1, 1954).

Treatment of Vitiligo.—Dr. Inis Flores Ceballos, clinical chief of dermatology of the San Fernando Medical School of Lima, has investigated the use of Ammidin and Ammoidin in the treatment of vitiligo in six patients from 9 to 50 years of age (*Revista médica del Hospital Obrero*, vol. 2, 1953). These two substances are extracted from Ammi majus (Linn.). All of the patients had had vitiligo more than one year. During the first week they were given one capsule containing 10 mg. of Ammoidin and 5 mg. Ammidin daily; they were given two during the second week, three during the third, and four during the fourth, depending on the patient's tolerance. If unpleasant side-effects

were noted, the dose was diminished or the treatment stopped temporarily. In no case did it have to be stopped indefinitely. The urine and blood of these patients were examined frequently. Concurrently the depigmented areas were painted daily with an alcoholic solution containing 2.5% Ammidin and 7.5% Ammoidin. Immediately after this topical application the treated areas were exposed to the solar rays from one to five hours, the duration of treatment depending on the patient's tolerance. Blistering was avoided. The therapeutic response was satisfactory. Pigment began to return in some patients 20 days after the treatment was started, the lesions of the face and trunk being the first to improve. Depigmented areas of the extremities responded slowly. No resistance to the drug and no relapses have been observed. The mechanism of the drug is not known.

TURKEY

Chemotherapy of Influenza.—In the *Turkish Bulletin of Hygiene and Experimental Biology* (vol. 13, no. 2) Prof. Zühdi Berke of the Ankara Refik Saydam Institute of Hygiene reported on the results of experiments concerning the sensitivity of various types and subtypes of the influenza virus to antibiotics and chemotherapeutic agents. Dilutions of solutions of various antibiotics and chemotherapeutic agents prepared in mixtures of broth and isotonic sodium chloride solution were incubated for two to three hours at room temperature with virus suspensions. The allantoic cavity of 12-day-old chick embryos was then inoculated with 0.25-0.3 ml. of the mixture. Five eggs were used for each dilution. Another five eggs were inoculated with the same amount of drug but no virus to control toxicity. The inoculated eggs were incubated for 48 hours at 36 C. They were then kept in the refrigerator overnight at 4 C. The allantoic fluid was withdrawn and the hemagglutination test performed.

A vial of oxytetracycline hydrochloride for intravenous injection, containing 500 mg. of oxytetracycline hydrochloride and 450 mg. of sodium glycinate, was diluted with a mixture of broth and isotonic sodium chloride solution to a mixture containing 80 mg. of oxytetracycline hydrochloride per milliliter. Dilutions containing 320, 240, 160, 80, and 40 mg. of oxytetracycline hydrochloride per 4 ml. were prepared from this stock solution and 0.1 ml. of a 1:50 dilution of influenza virus type A (PR-8) was added to each tube. This was the first set of mixtures of oxytetracycline and virus. The second set was prepared by making a 1:5 dilution of each mixture of the first set just before inoculating the eggs. Five eggs were inoculated with each mixture. All embryos incubated with the first and second dilution of the first set of mixtures (20 and 15 mg. of oxytetracycline hydrochloride, respectively) died. Two of five embryos inoculated with the third dilution of the first set of mixtures (10 mg. of oxytetracycline per dose) and some of the embryos receiving the last dilutions also died. The embryo of 3 of 25 eggs inoculated with the second set of virus and oxytetracycline mixtures also died. The dead embryos contained a small amount of cloudy, brownish fluid. The fluid of living embryo was colorless and transparent. The hemagglutination titer was 1:640. It was observed that 40 mg. of oxytetracycline hydrochloride is toxic for chick embryos, and 80 mg. per milliliter did not destroy the influenza virus after two hours' incubation at room temperature. Experiments with chlortetracycline and oxytetracycline together, chlortetracycline, polymixin B sulfate, chloramphenicol, and isoniazid did not destroy the influenza virus.

Experiments with chemotherapeutic agents, antiseptics, thimerosal, Rivanol (6,9-diamino-2-ethoxyaeridine), acriflavin (Trypaflavin) quinacrine, and quinine revealed that only the 0.78% solution of quinine destroyed the virus. This seems to indicate that quinine might be of value in the treatment of epidemic influenza, it being an old practice to give quinine in the treatment of diseases of the respiratory system. Accumulation of quinine in the liver, lungs, and brain and its excretion through saliva is important. A gargle prepared from a tasteless derivative of quinine may prevent droplet infection, inactivating the virus in the mouth and throat, since the good effects of oxytetracycline and chlortetracycline on bacteria of the respiratory tract are recognized and the cause of death from influenza is often due to secondary infection. A combination of quinine and oxytetracycline or chlortetracycline should result in a lowering of influenza mortality. Professor Berke concluded his report with his investigation concerning the effect of Nitromin (2,2'-dichloro-N-methyldiethylamine oxide) on the influenza virus. The experiment showed that Nitromin inactivated the influenza virus type A (PR-8) in a dilution of 1:200. Therefore a gargle with a 1:1,000 solution of Nitromin would inactivate influenza virus in the throat and prevent epidemics. As Nitromin does not damage the walls of the veins when used intravenously in cancer therapy, intravenous injections of this drug should be effective during influenza epidemics and in patients with viremia. In infections with highly toxic strains, the addition of Nitromin to quinine and antibiotics should result in a lowering of influenza mortality.

Effect of Penicillin on Lupus Erythematosus.—In *Saglik Dergisi* (vol. 26, no. 6) Dr. Ali Çam of the Diyarbakir General Hospital reports a case of disseminated lupus erythematosus that responded to penicillin therapy. Two weeks before the patient, a 29-year-old man, was admitted to the hospital pain in the joints suddenly developed. He had a high temperature accompanied by loss of hearing, and within a few days red patches appeared on his face and hands. When examined at the hospital he had a temperature of 103 F, a coated tongue, and erythematous patches on his hands and face. On both sides of his nose he had disk-like dark patches, with raised edges and depressed centers covered with scales. His fingers were covered with lesions of various sizes. He had three erythematous hemorrhagic patches on his tongue and palate and an inflamed buccopharyngeal patch. He was unable to swallow. He had bronchial and pleural rales. His spleen had descended 2 in. (5 cm.) below the costal margin. His abdomen was soft. The patient's blood pressure was 110/70 mm. Hg; Wassermann and Kahn reactions, blood culture, and malarial smears were negative; the erythrocyte count was 3,450,000 per cubic millimeter and the leukocyte count 4,000. Urinalysis showed some albumin, erythrocytes, and many granular casts. The patient was given 500,000 units of penicillin daily for nine days. His temperature reverted to normal, the bronchial and pleural rales diminished, and within five days the buccopharyngeal patches disappeared and he could take food again. When, after a few days, the bronchial and pleural rales increased, the patient was given two more courses of penicillin therapy. All lesions and patches had completely disappeared when he was discharged after five weeks. He received a total of 6,500,000 units of penicillin.

Cortisone and Corticotropln in Chorea.—In *Medical World* (vol. 25, no. 7) Prof. N. Polvan of the Istanbul University neurological clinic and his co-workers reported a case of chorea responding to cortisone and corticotropin. The patient, who was an 8-year-old boy, had three attacks of chorea, with mental impairment and a subfebrile temperature during remission. The first attack, one year prior to admission to the hospital, began with a sore throat and a high temperature and involuntary movements of his hands and arms. He was given penicillin therapy, and he recovered but remained subfebrile. After a year he had a second attack with more pronounced symptoms. It began 10 days prior to admission to the clinic, with a sore throat and a temperature of 98.6 F. He vomited, had pains in his joints, involuntary movements of his extremities, and twitching of his face. His parents were in good health, but his maternal grandmother was an epileptic and an uncle had dementia praecox. The patient had normal active muscular movements (when the choreic spasms permitted), normal reflexes, and normal muscle tone of the arms. He had involuntary movements of the face, mouth, tongue, and extremities. Serologic and blood tests were negative. He was given anticonvulsant and antibiotic drugs, Om-Hydantoin, Aristobrom, and vitamins, and his involuntary movements gradually ceased. One year later a third attack occurred. The symptoms were still more pronounced; he had a temperature of 100.4 F; he had speech disturbance, was irritable, and was unable to walk. On readmission to the clinic the same treatment was given, and although it was continued over a much longer period it had no beneficial effect. Then corticotropin and cortisone were given, and the patient recovered.

CORRESPONDENCE

TETANUS IMMUNIZATION

To the Editor:—The editorial "Tetanus Immunization" in THE JOURNAL of Oct. 2, 1954, page 501, presents certain aspects of this problem in a clear and timely fashion, but it also contains a number of statements that run counter to the vast experience already available bearing on this question. References can readily be cited to the following specific points.

1. It is stated that under specified circumstances antitoxin "must be used in addition to the usual booster dose of tetanus toxoid. These indications are: (1) poor general health or the presence of diseases of a debilitating nature; (2) considerable blood loss at the time of injury, as in military combat or vehicle accidents; (3) delay of several days in the administration of an indicated booster dose of toxoid; and (4) the presence of local lesions (compound fractures, severe lacerations, etc.) considered very likely to result in clinical tetanus." The first indication is presumably based on a widespread but largely unsupported belief that debility interferes with antibody formation and, perhaps, on the experimental work of Cannon and others, indicating that rats on protein-deficient diets are unable to produce or maintain normal antibody levels. Various studies reported in recent years have found no deficiency in antibody formation in cachectic or protein-depleted states; one can cite, for example, Balch (*J. Immunol.* **64:**397, 1950) and Havens and others (*Am. J. M. Sc.* **228:**251, 1954) working in man and Metcoff and others (*J. Lab. & Clin. Med.* **33:**47, 1948) working with rats on a protein-deficient diet. None of these workers found any impairment in antibody formation.

2. The second indication again is lacking in experimental or clinical support. Not only did Hartley and others (*Lancet* **2:**314, 1943) find that cold, inanition, or Clostridium perfringens infection had no deleterious effect on the booster response to diphtheria toxoid in guinea pigs, but the experience of the U. S. Army (Long and Sartwell: *Bull. U. S. Army M. Dept.* **7:**371, 1947) and Navy (Hall: *Ann. Int. Med.* **28:**298, 1948) in World War II provides confirmation of this in man. In 2,800,000 wounded soldiers and sailors during this war, there were 16 cases of tetanus. Of the 12 cases in the Army (2,700,000 wounds and injuries) there had been no immunization in 6. This contrasts with the high incidence of tetanus seen in German and Japanese prisoners of war and civilian casualties during the liberation of Manila (Glenn: *Ann. Surg.* **124:**1030, 1946). No U. S. military personnel during World War II received antitoxin after being wounded unless there was clear doubt that they had been immunized with toxoid. This experience with over 2 million wounds or other injuries vastly outweighs any theoretical considerations that might suggest that antitoxin therapy is indicated in such subjects.

3. The third indication is sound and wise and requires no further comment. The fourth indication is misleading; if it were necessary to give antitoxin following every "local lesion . . . considered very likely to result in clinical tetanus" it would obviously have been impossible to handle such wounds as successfully as was done in the U. S. forces during World War II. What the editorial probably meant was that certain types of wounds are prone to develop tetanus of a rapidly progressive, fulminating type, as wounds around the face or head (Lewin: *Brit. M. J.* **2:**11, 1944). In wounds of this type a physician might be justified in giving antitoxin as well as toxoid, although the American military experience again provides no indication for such a precaution.

4. The dogmatic statement that the dose of antitoxin, even when used with a booster dose of toxoid, must be 10,000 units or more appears to be based on speculation. It is true, as Spaeth (*J. A. M. A.* **132:**667 [Nov. 16] 1946) and others have pointed out, that 1,500 units is not wholly dependable for protection, but this has been found only in patients who had had no toxoid immunization and, therefore, does not appear to apply in the circumstance in question, since the booster response to toxoid is apparent in four days in about one-third of subjects so tested (Turner and others: *Bull. Johns Hopkins Hosp.* **94:**204, 1954) and in over 80% of subjects by six days (Looney and others: abstracted, *Fed. Proc.* **12:**452, 1953).

5. Finally, the statement "When a patient has not received at least one injection of tetanus toxoid, antitoxin and toxoid should not be administered at the same time" is not supported by the weight of available evidence. It is true that Frey and Schmid (*Ztschr. Immunitätsforsch.* **95:**486, 1939) and Paschlau (*Klin. Wchnschr.* **18:**7 and 60, 1939) found that combined active-passive immunization using a single dose of diphtheria toxoid did not induce effective diphtheria immunization, but a single dose, even of precipitated toxoid, is not an effective immunizing agent in any case. Otten and Hennemann (*J. Path. & Bact.* **49:**213, 1939) found that antitoxin interfered with active immunization of guinea pigs against tetanus with toxoid, but they also pointed out that this could be largely circumvented by appropriate scheduling of the respective injections. Gold and Bachers (*J. Immunol.* **47:**335, 1943), on the other hand, found that simultaneous injection of 1,500 units of tetanus antitoxin —in man—did not in any significant degree interfere with the active immunizing stimulus of toxoid; Downie and others obtained essentially the same findings in man (*Brit. M. J.* **2:**717, 1941) as Phair and Root did in guinea pigs (*Am. J. Hyg.* **35:**251, 1942) using diphtheria toxoid and antitoxin. No doubt, if 10,000 units or more of antitoxin were to be given at the same time as a first dose of toxoid, the effect of the toxoid would be partly if not largely suppressed; this has been shown by Cooke and Jones (*J. A. M. A.* **121:**1201 [April 10] 1943). In such a case, the first injection of toxoid should no doubt be postponed. However, it should again be noted that the experience of the U. S. armed forces, which have for a decade recommended simultaneous active-passive immunization using 1,500 units of antitoxin in persons not completely immunized with toxoid, has been extraordinarily successful. This experience is necessarily limited to recruits and may not be strictly analogous to the situations that might arise, for example, on a farm.

In summary, therefore, it needs to be clearly understood that the editorial in question has raised undue and unjustified doubts regarding the efficacy of emergency booster doses of tetanus toxoid in previously immunized persons suffering from tetanus-prone injuries; but that there is probably still a need for the exercise of individual judgment and discretion in the prophylaxis of such injuries in persons who have not had the benefit of tetanus toxid immunization. This leads, of course, to the general conclusion implied but not stated by the editorial: that it is the physician's responsibility to see that each of his patients is adequately immunized with tetanus toxoid *before* the emergency occurs. If this is properly done, the dilemma of simultaneous active-passive immunization need not arise, and the use of antitoxin with its discomforts and dangers can be obviated.

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EMOTIONAL ASPECTS OF RESPIRATORY DISORDERS IN COAL MINERS

To the Editor:—"Emotional Aspects of Respiratory Disorders in Coal Miners," by Ross, Miller, Leet, and Princi, in THE JOURNAL for Oct. 2, 1954, page 484, is the subject of this correspondence. Their careful psychiatric evaluation of 40 coal miners is commendable but certainly should not be considered typical or applicable to coal miners as an industrial class. The conclusions reached by these authors following analysis of this limited group are misleading and not consistent with our own observations, which are based on a study of more than 3,000

coal workers who have been carefully observed for periods of time ranging from three months to five years. Lest some physicians erroneously apply these conclusions to coal workers as a group, we feel compelled to comment on and examine their data more critically.

Ross and his colleagues report a 15% incidence of bronchial asthma in these 40 patients. This is about 10 times the reported incidence in the general population. Is the reader to assume that bronchial asthma is more frequent in coal workers, or that this is an unusual group of patients? Certainly we have no reason to question the accuracy of the diagnosis. Although a detailed analysis of our own cases has not been completed, it appears that the incidence of bronchial asthma will not exceed 2%. It is generally acknowledged that patients suffering from bronchial asthma commonly have associated psychogenic disturbances. Perhaps this disproportionately large incidence of bronchial asthma may be responsible for the unusually high incidence of psychoneurosis in these 40 persons. Additional examination of the data presented by Ross and his colleagues indicates that psychogenic factors contributed to varying degrees of disability in 87.5% of their cases and that in 35% they were the exclusive cause of disability. Examination of our last 200 consecutive clinic admissions of coal workers with respiratory complaints revealed psychogenic disturbances in 15.7%. This is not only far less than the incidence reported by Ross and his co-workers but also less than that seen in the population as a whole. Emotional factors unquestionably play a variable role in all patients suffering from disease, whether they be coal miners, lawyers, or doctors. In spite of the inherent socioeconomic difficulties associated with their occupation, our long experience with coal workers indicates that psychogenic disturbances are less frequent than one would reasonably expect in this group. The incidence of psychoneurosis in the many thousands of coal miners with respiratory complaints cannot be extrapolated from an analysis of only 40 subjects. A larger and more satisfactory sample would be necessary in order to derive statistical data that may be considered valid and applicable to this group of persons.

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CLINICAL PATHOLOGY STANDARDS PROGRAM OF THE COLLEGE OF AMERICAN PATHOLOGISTS

To the Editor:—The College of American Pathologists has embarked on a comprehensive program to improve the standards of performance in various fields of clinical pathology, including clinical chemistry, microbiology, and hematology. It emphasizes the principle that a pathologist must be broadly trained in these newer fields, not in tissue pathology alone. In its seven regional programs, the college collaborates with state pathological societies in educational programs for its members, especially in the fields mentioned. These regional programs supplement the national educational programs conducted so effectively by the American Society of Clinical Pathologists. The college has also sponsored voluntary proficiency surveys of laboratory procedure at the local level, to detect and to help correct errors in methodology present in the laboratories of its members. In the past, these proficiency surveys have been conducted largely in the field of clinical chemistry. They have proved so beneficial that the college has decided to conduct continuing surveys in this field and in other fields also, particularly in hematology, microbiology, serology, and parasitology. It has also encouraged qualified members to collaborate with colleagues locally and to serve as consultants in organizing and standardizing the procedures that are so essential to the modern practice of medicine.

Three years ago, as part of its initial program, the college established a Clinical Pathology Standards Program whereby carefully standardized solutions, hermetically sealed in glass vials, are distributed from the college office on a cost basis. They are to be used in the service laboratories either as unknown specimens or as standard controls to be employed periodically, even daily. This permits the pathologist and the technologists working under his supervision to detect and remedy errors that might arise, for example, through deterioration of color standards or through faulty preparation of reagents. At present, the variety of standard solutions available in the college office is limited to nine types of test materials. They include standardized solutions for control of blood sugar determinations and for the assay of nitrogen, creatinine, and the electrolytes measured by flame photometry. The program has been so popular among pathologists that the college has developed plans to extend it into other fields, for example, into the problems of hemoglobinometry. It is evidently a program that will eventually provide service of many types. The college regards these efforts as being essentially educational in nature. It takes the position that the development of laboratory medicine requires intensive and continuing training of personnel, both professional and technical. This can be carried out in part through organized conferences and seminars. The Clinical Pathology Standards Program is designed to bring help directly, and more or less continuously, into the individual laboratory.

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HUMAN RABIES

To the Editor:—With reference to the article on human rabies by Erickson and others in The Journal, June 26, 1954, page 823, I desire to raise the question of the role of rats in the causation of human rabies. I have described (Deshmukh, P. L.: Clinical Hydrophobia Without Contact with Rabies-Transmitting Animals, *Indian M. Gaz.* **84:**546, 1949) two fatal cases of human rabies in which contact with rabies-transmitting animals could be definitely excluded. Postmortem studies were not permitted, hence we had to depend on clinical diagnosis, which appeared to be very convincing. I made two suggestions to explain the human infection: (1) a possible direct transmission by rats, which are fairly common in an Indian household, and (2) an indirect transmission by food or water infected by rabid dogs or rats. It has been sufficiently proved that rats are susceptible to rabies and theoretically constitute a possible reservoir and a source of infection for man (Willmoth, A. D.: *J. A. M. A.* **140:**1191 [Aug. 6] 1949). The possibility of a "carrier" state in a susceptible animal is also worth investigating.

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KERATOACANTHOMA

To the Editor:—In reference to the article published in The Journal of June 5, 1954, page 562, entitled "Keratoacanthoma," I should like to point out certain discrepancies between the method of treatment cited and the possibility of histological diagnosis. Apparently, in this lesion, the differentiation from a low-grade squamous cell carcinoma rests on the criterion of invasion. Therefore, from a pathological standpoint, the practice of shaving the lesion flush with the surrounding skin and then electrodesiccating the base does not furnish the pathologist with an adequate specimen for this differential diagnosis. I personally have run across this problem in the last few weeks, and I strongly feel that, if any tissue is to be submitted for an examination, the entire lesion should be excised.

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BUREAU OF INVESTIGATION

TAKING THE CONTOUR OUT OF "KURVON"

"Kurvon," the oral bust developer, has been flattened. The Fraud Division of the Post Office Department has also flattened "La Contour" and "Charm-On," by closing complaints charging probable use of the mails to defraud. Affidavits of discontinuance were executed by the promoters of these three pills. Affidavits of discontinuance are, in effect, agreements to "go quietly." Otherwise hearings are held to determine whether or not the mails are being used to defraud. As a result of such affidavits of discontinuance, the postmasters at Chicago and New York are instructed to return mail addressed to these firms. "Out of Business" is stamped boldly across each envelope. Involved were the World Wide Pharmacal Distributing Company, the Universal Pharmacal Distributing Company, the Atlas Pharmacal Distributing Company, and the Penn Pharmaceutical Distributing Company, all of Chicago. Universal also had a New York mailing address. The signings took place in October, 1954.

"Kurvon" and "La Contour" have, as the alleged "active" ingredient, Galega in a tricalcium phosphate base, flavored with anise. "Charm-On," according to the advertisements, is Galega, vitamin B_1, and iron. The first two products were described in advertising as "From France—An Amazing Formula Discovery!" and as an "Amazing French Scientific Discovery for Unhappy Flat-Chested Women." The third was merely "Wonderful NEW Scientific Discovery helps develop lovely, womanly breast contour." Contrary to such blandishments, the only known effect of all three is the flattening of the pocketbook: $5 for 105 tablets!

Those who responded to the advertisements for "Kurvon" were sent facsimiles of letters (in French) by French pharmacists and alleged doctors of medicine. These testimonials were translated on the reverse of the page, for the awe and edification of the prospects. Distributed also was an essay on how the product worked, in part as follows:

> . . . The utilization of these plants as medicine has been known for centuries; the galactongenic [*sic*] action of Galega has been known for about a century. But it is as a result of recent research [?] that the eminently benefactory effects of this plant on the development and making firm of breasts has become known. The presence of Galega, on the one hand of acids (amines) indispensible [*sic*] for the tonus and nutrition of action that favorizes the secretion of milk and thus stimulating the mammary gland, is the essential reason for its efficacy. Apart from that, the high vitamin E content notably increases its eutrophic neuromuscular action. It is by a non-hormonal opotherapic nutritive process that Galega acts upon the frontal lobe of the hypophysis, thus bringing about the development and making firm of the mammary gland, this procedure has the great advantage of permitting prolonged treatments without any inconveniences.
>
> The stimulating action of Galega upon the mammary glands is reinforced by the addition of aniseed whose essential oil in being eliminated through the mammary gland intensifying its development. To this medical plant therapeutic compound, tricalcium phosphate adds its remineralizing properties and thus increases the nutritive and revigorating power of this therapeutic.

All this and some additional nonsense comes under the heading "Kurvon for the Development and Making Firm of the Breasts—Plant-Therapy for the Beautification of Women."

Anyone who promises an easy means whereby persons may overcome the short-changing of nature in strategic places will reap a harvest of dollars, provided his message can be disseminated successfully. That this has been a meteoric phenomenon can be laid directly on the doorsteps of the advertising managers of some of our large metropolitan daily newspapers. Several others did take the trouble to investigate, and turned down the copy. It is only fair to observe that these men are concerned with the need for honesty in advertising. The Bureau appreciates the fact that advertising is the mainstay of the income of our daily newspapers and that generally the material accepted for copy in the medical field is not swallowed whole by the public. That newspapers would lend themselves, without inquiry, to such a patent fraud, however, causes concern to this extent, that the campaign against misrepresentation on behalf of the public in the field of drugs, cosmetics, and devices is certainly far from successful. As late as September, 1954, advertising trade journals were taking notice of this newest of trade boosters. It was reported that in addition to newspaper advertising in 35 major markets, plans were under way to enter into a magazine and radio campaign for Kurvon. The great problem was how radio commercials could be worded without being offensive or suggestive!

As a result of the flamboyant newspaper advertising of the three mentioned products, the Bureau received a large number of inquiries, the majority coming from interested potential customers. These people, and the concerned advertising managers, were told that this material could have no effect such as was depicted in the copy. As a matter of fact, most persons were informed that these products, which had anise flavoring, would have about the same effect on the mammary structure as "Smith Brothers Cough Drops" (no offense meant to that product). Prospective customers who did inquire must have had their faith shaken in the integrity of the newspapers that carried such advertising. Advertising managers have means whereby they can determine whether or not the drug, device, or cosmetic advertisements they carry contain misrepresentations or are fraudulent enterprises. Some publishers do screen copy for this purpose. It is unfortunate that more do not realize their obligation to their readers. The promotion originated in May, 1954, and continued only until October. The ladies can be thankful for the prompt protective service of the Post Office Department, even though it may result in some additional "frustration." They do, however, have some solace if the new trend in women's fashions is as reported in some places.

This seems to be the proper time and place to call attention to the activity of the Post Office Department on behalf of the public, due in no small part to the venality practiced in the field of advertising. The Post Office Department advises that over the past five years affidavits of discontinuance were filed, as a result of the filing of complaints by the Solicitor that fraud was being practiced, in about 360 cases in the drug, cosmetic, and device field. In addition to that, an average of 25 fraud orders per year in this field are entered. This represents a substantial service to the public, of which little notice is taken. The constant "shopping" of by-mail enterprises is necessary partly because persons hate to admit they have been bilked. The other main reason, of course, is the department's realization that (to coin a phrase!) Barnum was right.

The cases mentioned above do not, incidentally, include the activity of the Federal Trade Commission, which is more directly concerned with advertising and which periodically announces in its reports stipulations or cease and desist orders against promoters who are advertising in a false and misleading manner. In addition to that, the Food and Drug Administration is able to make seizures and cause prosecutions of certain of the purveyors of health-in-a-bottle, by reason of what is called "the squeeze play." There are many instances, for example, in which a drug is labeled to be "for minor muscular aches and pains" or "for the relief of acid indigestion," but newspaper copy plays up the product either as a "new, amazing scientific discovery for arthritis" or as an adequate treatment for diagnosed ulcers. It is when the directions for use fail to carry adequate instructions in those disease categories that the squeeze play works and seizures and prosecutions result. Thanks to the vigilance of the Post Office Department and the other mentioned agencies of the government, a good many schemes, products, and persons have been quietly forced to quit or have been obliged to modify their claims. Oddly enough, these government agencies never run out of work.

THE LEISURE CORNER

LISTENING TO MUSIC

Many physicians are interested in listening to good music. Nevertheless, they are often aware that they do not listen to music with proper appreciation and understanding. They hear, but they do not listen; many of the beauties of a musical composition are lost precisely because its audience has not been adequately prepared for listening intelligently. Fortunately, opportunities for hearing music are much greater than they have ever been. With the increasing availability of good music on radio and phonograph records and in movies, television, and the concert hall, everyone has a chance to listen to music according to his capacity for enjoyment and understanding.

While there are no short-cuts to a better appreciation of good music, the simplest way of listening to music is to listen for the sheer pleasure of the musical sound itself. This, of course, transpires on a sensuous plane; it requires no mental effort and is done instinctively. To derive gratification from the performance of music, it is necessary to be able to hear many sounds at one and the same time; to be able to distinguish a variety of sounds emanating from various instruments in the orchestra, and to appreciate their quality, intensity, and pitch and their color or timbre. There is, however, one minimum requirement for listening intelligently to music—the physician must be able to recognize a melody when he hears it.

Music possesses four essential elements: rhythm, melody, harmony, and tone color. Most musical authorities agree that, if music started anywhere, it began with the beating of a rhythm. If there is any reason for doubting its primitive origins, one can always turn to the music of savage tribes for verification. Most human beings and many animals are pleasantly stirred by a recurring rhythm. Nevertheless, the notion that all members of the human race possess a sense of rhythm does not square with the facts. There are persons who cannot march in step or dance in time; curiously enough, a striking example can be cited in the case of Beethoven, who could not learn to keep in step while dancing. In the musical firmament, the survival of a composition depends far more on its rhythmic quality than on its melody. Melody, for the most part, is a matter of convention, usage, style, and the particular period in which it is introduced. In general, melody involves a series of tones at various pitch levels. An interested listener searches for a melody at length. The uninitiated listener is often "frightened off" at an initial hearing because he is unable to discern either a melody or a melodic line. On the other hand, the trained music-lover knows that one must frequently "live with a composition" before its melodic content becomes apparent. In comparison with rhythm and melody, harmony is the most sophisticated of the three. While rhythm and melody came naturally to man, harmony gradually evolved from what was partly an original conception of the human mind. Stated simply, when two or more tones of different pitch are sounded together, this results in the musical element known as harmony. Harmony can be a complex network of sounds such as is found in music that is orchestrated, or it can be an accompaniment utilizing a few chords as a background for a simple melody. Harmony has enormously enhanced the expressive power of both rhythm and melody. Hard on the heels of rhythm, melody, and harmony comes tone color or timbre. Timbre or tone color in music is analogous to color in painting; in fact, music can exist only in terms of some specific color in tone. Tone color incorporates the quality of sounds produced by various instruments. The intelligent listener should be cognizant of two objectives in relation to tone color: first, he should increase his awareness of different instruments and their individual tonal characteristics, and second, he should attempt to acquire a better appreciation of the purpose of the composer in employing any instrument or combination of instruments.

A notion commonly held in lay circles is that music must have a particular purpose or meaning. Many persons would like music to have a meaning, and the more specific it is, the better they like it. The more music reminds them of a storm, a pastoral scene, a funeral procession, or any other familiar conception, the more meaning that music appears to have for them. Stravinsky, the great Russian composer, once said that his music was an "object" or a "thing" with a life of its own and possessed no meaning other than its own purely musical existence. While it is often difficult to state in precise terms what it is that a piece of music means, so that everyone is satisfied with the explanation, this is not to deny that music is and can be expressive. Yet the effect music has on our emotions often cannot be expressed adequately in words, but only in poetic concepts. A truly musical person listens to a composition without reference to any external, nonmusical thought. Sensory perceptions are so interrelated and so intimately bound up with human experiences that exclusion of these from the combined impression is possible only through the greatest concentration. Of course, there is no objection to building whatever mental pictures are evoked by association of ideas while listening to music. What is worth while emphasizing is that the beauty of instrumental music can affect the truly musical without any association with a particular image or concept.

For many physicians a readily available medium for listening to good music, other than attendance at concerts, is provided either by phonograph records or by certain frequency modulation radio stations that will mail copies of their programs on request. Some of the tools required for a full understanding of music include an inexpensive musical dictionary and ready access to biographical material on the lives of composers. Once these items have been obtained, the next step is to select one aspect of the world of music for study. Records can be selected from the field of symphonic music, chamber music, art-song, or such representative solo instruments as the piano, violin, or 'cello. For the beginner, other aspects, at least for the time being, should be regarded as being too cumbersome.

Suppose that symphonic music is selected (although, actually, one division of the musical world can be just as desirable as the others). In the field of symphonic music it is possible to arbitrarily choose any one of the masters, for example, Haydn, Mozart, Berlioz, Brahms, or Schumann. Let us say that the choice is Beethoven. The time is now ripe to obtain some biographical information about Beethoven, preferably on the basis that the work can be read with ease and speed rather than because of its appeal to the musically sophisticated. During the course of reading it would be advisable to make notes on what appear to be significant periods in Beethoven's career, as well as on the types of symphonic music that were composed at the time. Suppose, furthermore, that one of the phonograph records selected is Beethoven's Symphony no. 5, Opus 67. There are four movements to this work: (1) allegro con brio; (2) andante con moto; (3) allegro (scherzo); and (4) allegro presto. The musical dictionary quickly tells us that the English equivalents of these terms are: (1) quick, with brilliancy; (2) moving easily, with motion or agitation; (3) quick, in a sporting or jesting manner; and (4) quick, quicker. The next thing to do is to play the record and listen carefully to each movement, and then attempt to describe to oneself the emotion that is conveyed to one by the performance. It is astonishing what a wide range of emotions will fall under such headings as exuberance, despair, fury, mysticism, humor, serenity, joy, love, or exotic passion, to mention a partial list. No matter what emotion or combination of emotions appears to affect one, the choice, at least as regards oneself, should be considered as being correct, for a musical experience is always a personal matter to the listener himself. Repeated hearings are necessary to bring complex music into complete focus; one should always make it a point to listen for the various elements of music. Another highly satisfactory method for learning to listen to music has recently been developed that includes use of records that present, on one side of the record, uninterrupted performances by leading orchestras or instrumentalists; and, on the other side, conversational analysis of the themes of the work played separately. This type of record provides an enjoyable form of self-education in music.

To a certain extent, taste in music can be evolved by intelligent listening. This, of course, requires listening in an unprejudiced way to music derived from all schools and all periods, old and new, conservative as well as contemporary. Music can become alive when there are educated listeners who themselves are alive, musically speaking. No better advice can be offered than to listen consciously, intently, and with intelligence.

MEDICAL LITERATURE ABSTRACTS

INTERNAL MEDICINE

Analysis of the Electrocardiograms Obtained from 1,000 Young Healthy Aviators: Ten Year Follow-Up. J. M. Packard, J. S. Graettinger and A. Graybiel. Circulation **10:**384-400 (Sept.) 1954 [New York].

Electrocardiograms of 1,000 healthy aviators between the ages of 20 and 30 years were taken and analyzed between 1940 and 1942; 960 were traced after an interval of at least 10 years. Two hundred two men had died, but only one of these died of heart disease (myocardial infarction); his electrocardiogram had been normal in 1941. Of the 798 survivors, 703 (88%) were reexamined, and only 4 of these had objective evidence of heart disease; one had coronary heart disease with myocardial infarction, 2 had hypertensive heart disease, and one had chronic cor pulmonale. Eight other men showed enlargement of the heart by x-ray examination, without other evidence of heart disease. Twelve others had blood pressures greater than 145/95 mm. Hg with otherwise normal findings. In 639 men the electrocardiograms taken in 1940 and again in 1950 were subjected to statistical analysis. The heart rate increased from a mean of 64 to 75 beats per minute, the mean P-R interval increased from 0.154 second to 0.159 second despite the increased heart rate; the mean QRS duration changed only slightly from 0.087 second to 0.085 second, and the mean uncorrected Q-T interval decreased from 0.384 second to 0.361 second. The QRS axis (mean frontal plane QRS vector) shifted to the left from 61.6 degrees to 48.2 degrees, and the T axis (mean frontal plane T vector) likewise moved slightly to the left from 42.6 degrees to 40.7 degrees. There was a wide range of measurements of the electrocardiograms of these healthy men, but in the individual cases the change over a period of 10 years was relatively slight. This was true both for the normal electrocardiograms and for the 90 that fell in the borderline zone between normal and abnormal. These findings support the conclusion that an electrocardiogram obtained at an early period in life, the so-called baseline electrocardiogram, is valuable for future comparison. In 8% of the cases comparison of the two tracings revealed significant differences. In a few instances the changes could be attributed to the development of definite or probable heart disease, but in most cases the differences consisted of the inexplicable appearance or disappearance of borderline variations, probably indicating a lack of reliability in the electrocardiographic method. Validity in clinical electrocardiography is concerned with the regularity of association of abnormal records with the presence and normal records with the absence of heart disease. Of four men with definite heart disease, only one had an abnormal electrocardiogram, and of 20 men with possible heart disease, as evidenced by hypertension or enlarged hearts, none had an abnormal electrocardiogram. Conversely, a number of men with borderline or frankly abnormal tracings who have been followed for at least 10 years have no other subjective or objective evidence of heart disease. These data confirm the lack of validity of the electrocardiographic method.

The place of publication of the periodicals appears in brackets preceding each abstract.

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Study of Serial Electrocardiographic Pattern Changes Occurring with Two Sequential Anterior Myocardial Infarctions. H. A. Flack, J. A. Mart and C. C. Maher. Am. J. M. Sc. **228:**288-297 (Sept.) 1954 [Philadelphia].

Flack and associates made a study of the clinical and the serial electrocardiographic records of 12 patients who had had two sequential myocardial infarctions, both anterior in location. Two of the patients came to autopsy. The importance of serial electrocardiograms became evident. A single electrocardiogram selected from the group, taken at an early stage of the clinical course of the second infarction, implied a recent anterior infarction with no evidence to denote the old infarct. When such a tracing was examined comparatively with previous tracings taken during and after the first infarction, the existence of the old and the new was obvious. Likewise, a single tracing taken weeks or months after the second gave no information as to the presence of two infarcts. When serial electrocardiograms were available, beginning with a normal tracing taken prior to the first episode, with tracings made in the acute stage and the convalescence and recovery periods of the first and second episodes, the electrocardiographic evidence corroborated the clinical records of the two infarctions and located them in the same area. Review of the clinical records indicated that the severity of the pain, its duration, distribution, and the degree of collapse of the second attack in no way indicated that a new infarct was developing on an old scar. Postmortem examination of the patient who died early in the course of the second infarction revealed evidence of a new and an old infarct in the anterior portion of the left ventricle. In another patient who came to autopsy some years after the second infarction there was irregular scarring in the anterior portion of the left ventricle, but two separate scars were not identified. The authors gained the impression that second myocardial infarction in the same area occurs much more frequently than is currently recognized. Diagnosis of the second anterior infarction is dependent not only on the serial electrocardiographic pattern changes but also on the availability of the clinical and electrocardiographic records of the first infarction. Residual defects are more marked after the second infarction than after the first. The authors feel that further studies of sequential myocardial infarction would be desirable.

Bicuspid Aortic Valve and Aortic (Valsalva) Sinus Aneurysm Opening into Right Auricle: Embolic Gangrene of Left Foot. H. Basabe, D. Hojman and E. Rósemblit. Rev. Asoc. méd. argent. **68:**173-176 (May 15-30) 1954 (In Spanish) [Buenos Aires, Argentina].

Congenital aortic sinus aneurysm is rare. Twenty-six cases proved at autopsy have been reported in the literature. In six of these cases the aneurysm coexisted with a bicuspid aortic valve. In other six the aneurysm opened into the right auricle. The subject of this report was a man 30 years old in apparently normal health. Suddenly he complained of acute pain in the left leg; gangrene of the left foot developed, and there were symptoms of progressive cardiac insufficiency. The seriousness of the cardiac symptoms prevented the patient from having an amputation. A presumptive diagnosis of congenital cardiopathy was made because of the absence of syphilis and rheumatic fever, the presence of a duplicate murmur that was audible between the third and fourth left intercostal spaces, and the enlargement of the heart in its whole diameter as shown by teleroentgenography. The treatment with antibiotics, cardiotonics, and blood transfusion was ineffective. Rupture of the aneurysm into the right auricle was proved at autopsy. The aneurysm was located in the aortic sinus and coexisted with a bicuspid aortic valve. Ulcerative endocarditis, chronic inflammation, and stenosis of the mitral valve were observed.

Virulence of Strains of Koch's Bacilli in Relation to Streptomycin Sensitivity. G. Cascio and R. Purpura. Minerva pediat. **6**:597-600 (Aug. 15) 1954 (In Italian) [Turin, Italy].

Experiments were made to test the virulence of streptomycin-resistant strains of tubercle bacilli that were isolated from children with tuberculous processes, especially meningitis. Three strains sensitive to from 15 to 20 gamma of antibiotic per cubic centimeter of blood and three sensitive to from 0.5 to 1 gamma per cubic centimeter were used. Their virulence was tested by inoculating six groups of five guinea pigs each with bacilli from one of the six strains. The animals, whose weight was checked every two weeks, were followed until they died. Autopsy was performed in all of them. The results indicated that the strains with a greater resistance to the antibiotic were more virulent than the others. The survival period was shorter in the guinea pigs that were inoculated with these strains, and the findings at autopsy were severer.

Local Application of Hydrocortisone in Chronic Inflammatory Processes of the Periosteum, Joints, and Connective Tissue. A. L. Meier. Schweiz. med. Wchnschr. **84**:971 (Aug. 21) 1954 (In German) [Basel, Switzerland].

Of 44 patients in whom local application of hydrocortisone acetate was given a therapeutic trial, 21 had tenoperiostitis (humeral epicondylitis, styloiditis of the radius, and tenoperiostitis of the knee joint); 7 had humeroscapular periarthritis; 7 osteoporosis due to trauma (Sudeck's atrophy) and fibrous-ankylosing joints; 5 arthronotic, post-traumatic complaints; 2 paratenosynovitis; one arthritis of wrist joint; and one myositis ossificans. Excellent results were obtained in the patients with tenoperiostitis; hydrocortisone acetate is the drug of choice in treating humeral epicondylitis and styloiditis of the radius. Prompt healing resulted in most patients from one application of 25 mg.; treatment had to be repeated only in exceptional cases. Results varied from prompt healing to failure in the patients with humeroscapular periarthritis, paratenosynovitis, arthronotic complaints, and fibrous-ankylosing joints. An excellent result was obtained in the patient with myositis ossificans. The favorable effect of the drug on Sudeck's atrophy was pronounced.

Chondromyxoid Fibroma. R. N. Wrenn and A. G. Smith. South. M. J. **47**:848-854 (Sept.) 1954 [Birmingham, Ala.].

Case reports are presented of five chondromyxoid fibromas found among 770 bone tumors of all types in the Duke Hospital Pathologic Museum. These are reviewed together with the cases existing in the literature, a total of 15 cases. The patients ranged in years from 12 to 56, but there was a predilection for the younger age groups. Both sexes were equally affected. All but one of the lesions were located in the bones of the leg, eight being in the tibia, three in the femur, and three in the small bones of the foot. In the long bones, the fibroma was always in the metaphyseal region. The clinical history is one of either accidental discovery or mild skeletal pain of several months' duration with no characteristic pattern. The lesion was never observed to metastasize and ran a benign course in all cases. Curettage and filling with bone chips resulted in cure. Radiographically, a cystic area of decreased radiodensity with a well-defined border was seen. The picture of chondromyxoid fibroma is indistinguishable from that of many other benign tumors, but the roentgenograms are of value in the differential diagnosis from chondrosarcoma, which histologically resembles chondromyxoid fibroma. The clinician, radiologist, and histopathologist must all be familiar with the characteristics of this lesion, so that radical operative procedures may be avoided.

Negative Kahn Standard and Positive VDRL Slide Tests for Syphilis: Clinicoserologic Evaluation of Preselected Patients. S. Olansky, A. Harris, W. F. Edmundson and D. S. Rambo. A. M. A. Arch. Dermat. & Syph. **70**:282-288 (Sept.) 1954 [Chicago].

At the Venereal Disease Research Laboratory, 251 out of 270 patients selected on the basis of blood tests showing some reaction in the VDRL slide test and negative findings in the Kahn standard test were found to have syphilis or to have been treated for this disease. A greater number of positive Treponema pallidum immobilization (TPI) test findings may be expected in this patient category than would be obtained with complement-fixation or flocculation tests for syphilis reagin. Positive TPI results may occur in the absence of clinical or historical evidence of syphilis, and negative findings with this test may be associated with strong evidence of syphilis infection. Serologic tests for reagin and the TPI antibody are valuable aids in the detection of syphilis but should not be considered to be, of themselves, diagnostic of the presence or absence of syphilis infection.

Occurrence of Malignant Disease in Syphilitic Individuals. P. D. Rosahn. Am. J. Syph. **38**:413-421 (Sept.) 1954 [St. Louis].

The frequency and distribution of malignant disease, as determined at autopsy, were studied in a group of syphilitic white persons over 20 years of age, and comparisons were made with a control group of nonsyphilitic persons similarly studied. It was found that malignant disease in general, and without regard to type or primary site, occurred no more frequently among the syphilitic persons than among the nonsyphilitic controls. There was suggestive but not conclusive evidence to indicate that syphilitic persons with malignant disease have primary lesions located in the tongue more frequently than do nonsyphilitic persons with cancer. Too few cases of cervical carcinoma were noted to permit any conclusions regarding the possible association between syphilis and cancer of the cervix.

Pulmonary Localization of Certain Lymphogranulomatoses of Unknown Cause. J. Machado Filho, B. Duque, M. Sá Freire de Abreu and A. Escobar. Rev. brasil. tuberc. **22**:23-66 (Jan.-Feb.) 1954 (In Portuguese) [Rio de Janeiro, Brazil].

The subjects of this report are a patient with pulmonary sarcoidosis and five with Hodgkin's disease. In the patient with sarcoidosis the tuberculin test (Mantoux 0.1) gave positive results. The intradermal inoculation with BCG gave negative results. Hodgkin's disease involved the cervical and mediastinal lymph nodes in one patient, the hilar lymph nodes and the lung parenchyma in two, and the external lymph nodes in two. The tuberculin tests gave negative results in four of the patients, including one with healed pulmonary tuberculosis and one with active pulmonary tuberculosis. The intradermal inoculation with BCG gave positive results in one patient, strongly positive results in two, and negative results in the patient with active pulmonary tuberculosis. The authors discuss the etiology of sarcoidosis and Hodgkin's disease and the effect of these diseases on the natural reactions of immunity against tuberculosis as shown by the tuberculin test. Both diseases have been generally credited with being of tuberculous nature because: 1. Pulmonary tuberculosis is a frequent complication. 2. The tuberculin test gives negative results in the majority of the cases. 3. Negative results to tuberculin continue to be negative even after intradermal administration of BCG. None of these factors, however, prove the tuberculous nature of the diseases. The frequency of pulmonary tuberculosis and the anergy to tuberculin in patients with either sarcoidosis or Hodgkin's disease are the result of the involvement of the reticuloendothelial system by the disease, with consequent loss of its capacity to form antibiotics and to produce reactions of immunity against infections.

Treatment of Acute Leukemia with Cortisone and Corticotropin. P. Fessas, M. M. Wintrobe, R. B. Thompson and G. E. Cartwright. A. M. A. Arch. Int. Med. **94**:384-401 (Sept.) 1954 [Chicago].

In order to ascertain why corticotropin and cortisone therapy is effective in some cases of leukemia and fails or even accelerates the course in others, cases of patients with acute leukemia treated with these hormones at the department of medicine, College of Medicine, University of Utah, were reviewed, except those receiving the hormones for less than one week and those whose course could not be followed at frequent intervals. To make the study as objective as possible, blood and bone marrow smears from each of the 47 patients were reviewed by one of the authors without knowledge of their source. Excellent results were obtained with hormone therapy in the lymphoblastic type of leukemia, complete remissions occurring in 18 of 22 children 10

years of age and under and in three of nine older patients. Partial remissions were described in another seven cases. There were only three failures. In contrast, among 15 patients with acute myeloblastic leukemia there were no complete remissions and only two partial remissions. This form of treatment also failed in a patient with acute monocytic leukemia. In some of these patients treatment seemed to accelerate the leukemic process. These observations suggest that hormone therapy should be reserved for the lymphoblastic variety of acute leukemia, and that, in the other forms of acute leukemia, such therapy may even be contraindicated.

Total Alkaloids from Rauwolfia Serpentina in Treatment of Hypertension. H. Kleinsorge and H. H. Wittig. Medizinische **No. 33/34:**1086-1089 (Aug. 21) 1954 (In German) [Stuttgart, Germany].

Rivadescin, a commercial preparation of Rauwolfia serpentina containing alkaloids of the ajmalin and serpentin group, was given a therapeutic trial in 84 ambulatory patients with hypertension. Of the 84 patients, 18 (21.7%) had labile hypertension, 11 (13.3%) had fixed hypertension, and 55 (65%) had blood pressure levels that varied but were never normal. The total dose of the administered Rauwolfia alkaloids varied between 46 and 400 mg. The daily dose never exceeded 10 mg. The average period of observation was 15 months, which included a pretreatment period in 25 patients and an adequate post-treatment period in 23 patients. The mean values of diastolic and systolic blood pressure were determined according to Martini's arithmetical formula to make them statistically sound. A significant drop in blood pressure was observed in 42 patients (50%). The reduction of systolic pressure was somewhat more pronounced and more frequent than that of the diastolic pressure. Patients with essential hypertension showed a slightly better response than those with nephrogenic hypertension. The best results occurred in hypertensive patients in whom cardiac disturbances predominated. Fifty-five patients (65%) considered themselves improved regarding dyspnea, overexcitability, headache, and tinnitus after 10 to 14 days of treatment. Corresponding organic changes could not be found by examination of the ocular fundus, electrocardiogram, and renal function tests. The subjective improvement did not parallel the hypotensive effect of the drug. Most patients who did not show a statistically sound reduction of their blood pressure reported subjective improvement, and only few of the patients with nephrogenic and fixed hypertension did not obtain a reduction in blood pressure or subjective improvement. Side-effects of the drug consisted of fatigue, a mild laxative effect, and occasional hyperemia of the nasal mucous membrane. The following treatment schedule is recommended. For the first four days 1 mg. of the drug should be given at night, and within the following 10 days the dose should be increased gradually to 2.3 mg. given three times daily. This dose may be maintained for two to three weeks and then discontinued. If a hypotensive effect cannot be obtained with a daily dose of 6.9 mg., it will not be obtained with a higher dose. Treatment may be resumed after an interval of two to three months, with a good chance of success, but because of acquired tolerance the dose of the drug must be increased. The hypotensive effect of Rivadescin and its effect on subjective complaints exceeds that of all other drugs, even that of reserpine, although the sedative effect of the latter may be more pronounced.

High Blood Pressure in Older Women. H. Wakefield. Postgrad. Med. **16:**175-177 (Sept.) 1954 [Minneapolis].

Wakefield made his observations on hypertension in older women over a period of 20 years at the Old People's Home of Chicago, where about 150 women of the age group from 70 to 100 years are being cared for. Accurate and detailed records have been kept on the course of the elevated blood pressure in these women, most of whom lead active lives for their age. They are encouraged to keep up their interests and activities in the community. They are not bedridden or sitting around in rocking chairs. A study of the records of some 500 of these women revealed that about 75% have hypertension. The pattern of the elevated blood pressure remains about the same after the age 70; for example, a blood pressure of 240/110 mm. Hg in a woman of that age will remain in this range during the 8th, 9th, and 10th decades if she lives. The author never saw a permanent remission in one of these patients. He feels that in women beyond the 70th year the diastolic pressure varies more than is generally recognized. Ranges of diastolic pressure from 70 to 150 mm. Hg are frequent in the same person. A study of the earlier medical records revealed that in many of these women the hypertension began from 5 to 10 years before the menopause, that is, at the Old People's Home there are many women who have had benign essential hypertension for from 30 to 60 years. About 10% of the 150 resident women have angina pectoris and function well in spite of it. The presence of angina pectoris does not seem to shorten their lives. Before they came to the Old People's Home most of the women were blood-pressure-conscious and had tried many medical remedies for hypertension. These drugs had had no effect on the level of their average blood pressure readings. Encouragement and reassurance is the only treatment the author used. Neither drugs, diet, nor surgery was used. Blood pressure readings should rarely be mentioned. The author feels that the following questions remain unanswered: 1. Why is the mortality from essential hypertension definitely lower in women than in men? 2. Why is the increase in the severity of the disorder usually slower in women? 3. Are the good results in certain types of treatment determined largely by the selection of patients in whom the prognosis is good in any case? 4. Is the use of potentially dangerous hypotensive agents indicated in milder degrees of hypertension in which the natural survival time is so long? 5. Finally, can one really change the course of essential hypertension?

Liver Damage at Ordnance Plant: Incidence and Prevention. N. B. Daniel. Indust. Med. **23:**409-410 (Sept.) 1954 [Chicago].

Contact with trinitrotoluene involves the danger of severe liver impairment and/or aplastic anemia, which may cause death. At a plant where shells are loaded with trinitrotoluene efforts were made to eliminate these dangers. A modification of the thymol turbidity test of MacLagen was selected as a test that would provide accurate information about impairment of the liver. While this is not strictly a liver function test, it furnishes evidence of liver cell irritation (probably depending on the alterations in the plasma proteins that occur as a result of parenchymal liver disease, especially an increase in the gamma globulin fraction). This test has proved most satisfactory. At the author's laboratory 4,641 thymol turbidity tests were carried out. Clinical histories were taken and examinations were made, and in this way considerable facility in interpretation was acquired. Preemployment examinations revealed an average of 0.93 MacLagen units. The mean average for employees in toxic areas was 1.80 units. Workers in toxic areas with a MacLagen unit factor of up to 2.9 were considered to come within the normal range. This was the case in 1,345 or 87.5% of workers within toxic areas. The 152 workers with a range of 2.9 to 4.9 MacLagen units are referred to as "green-light" workers, meaning that although their thymol turbidity test reading was above the arbitrarily adopted normal, they were free from ill-effects. All these 152 workers (9.89%) felt fit. Forty workers (or 2.66%) were found to have 5 or more MacLagen units and 36 of these had symptoms of liver damage. These workers were immediately moved to jobs in inert areas; placed on a high protein, high caloric diet; and advised to rest. They were called to the hospital for examination, treatment, and advice. Subsequently, after weekly examinations, their readings all returned to normal within a period of three weeks or less. It seems that the thymol turbidity test is of distinct value in preventing serious liver impairment.

Special Services for the Senile in a Home for the Aged. J. Weil. Geriatrics **9:**443-445 (Sept.) 1954 [Minneapolis].

It has been observed that when patients with arteriosclerosis participate in a group-work program their emotional life improves and excitement and disturbance are allayed. This suggests that this type of patient does not need placement in a hospital for the mentally ill but can be cared for in a home that offers a protective environment together with an integrated therapeutic program. These patients should be limited to passive activities

of a social nature in which only those recreational means suitable to their limited level are used. The patients are no longer exposed to competitive group living with mentally alert residents; they no longer feel discrimination and thus show less irritation. Since some of the senile residents had shown ability to function in the activities of the occupational therapy department, it was decided to include occupational therapy as an integral part of the program. Well persons whose spouses are senile and day-care patients are included in the program. Each morning a nurse brings the residents to the occupational therapy department for various activities to reactivate functions still within the patients' capacity. One may see a senile resident working on a loom, crocheting and hooking a rug, sewing wool and cotton rag strips together, finger-painting, winding yarn, or sorting colored buttons. These identical buttons may have been sorted dozens of times in the same fashion by the patient. Since he is praised and encouraged, this repetitious "playing" symbolizes a job well done to the senile patient. Entertainment is also planned and adapted to the receptivity of the group. A record player with simple familiar melodies re-creates appreciation for the music of long ago. One of the healthiest faculties remaining in the senile is the sense of music and rhythm. The music has a quieting effect on these senile patients. Those who are disturbed and agitated become pacified and momentarily serene, as well as alive with the joy of the music. Their blankness disappears as long as the activity lasts.

Rauwolfia Serpentina in Treatment of Arterial Hypertension. A. Ravetta. Minerva med. **45**:316-319 (Aug. 11) 1954 (In Italian) [Turin, Italy].

A preparation of Rauwolfia serpentina (Rivadescin) was used to treat 40 patients with hypertension. Most of the patients had essential hypertension, but in some the hypertension was associated with myocardial impairment, arteriosclerosis, endocrine disorders, and nephropathy. A 2.3 mg. tablet of the drug was given three times a day, after each meal. Patients with essential hypertension received the preparation alone, whereas the others received it together with the specific therapy for the associated condition. The treatment was continued for a few weeks and in many cases for more than a month. The drug was well tolerated and there were no side-effects. The results were good, especially in patients with essential hypertension and in those treated in the hospital. A drop in blood pressure was secured in from 6 to 10 days, but it became more pronounced after two to four weeks. Both systolic and diastolic pressures were benefited. In some patients the former dropped as much as 80 mm. Hg and the latter 60 mm. Hg. Other good effects of the treatment were: (1) the attenuation or disappearance of headache, insomnia, asthenia, ear buzzing, and improvement of the mental capacities and memory, which had been reduced; (2) the decrease or disappearance of palpitation, precordial pain, and sense of anguish; and (3) the improvement of the heart condition as shown clinically and with electrocardiograms.

Subacute Erosive ("Peptic") Esophagitis: Clinical Study of 100 Cases. E. D. Palmer. A. M. A. Arch. Int. Med. **94**:364-374 (Sept.) 1954 [Chicago].

Palmer is concerned with subacute erosive esophagitis, also known as "peptic" and "regurgitant" esophagitis, which, together with its more acute counterpart, acute erosive esophagitis, appears to be the commonest disease of the esophagus. In the cases under discussion there was no specific causative factor, such as a specific infectious agent, ingestion of a corrosive, recent retention of indwelling esophageal tube, systemic infectious disease, cerebral disease or important cutaneous trauma (Cushing and Curling influence), obstruction at the cardia, carcinoma of the esophagus, diffuse collagen disease, or deficiency disease. Studies were made on 100 adults with the esophagoscopic and/or transesophagoscopic biopsy diagnosis of subacute erosive esophagitis. Esophageal investigation was instituted because of chest or upper abdominal symptoms, upper gastrointestinal hemorrhage, or because the presence of cirrhosis necessitated search for esophageal varices. The esophagoscopic evaluations were made under four-diameter magnification (Eder-Hufford esophagoscope). Hiatus hernia existed in 24 patients; 13 patients had a history of frequent vomiting (pregnancy, pyloric obstruction, and postoperative vomiting). Seven patients had an active duodenal ulcer, four had an inactive duodenal ulcer, and three had an active gastric ulcer. Other gastric diseases included carcinoma in two instances, leiomyosarcoma in one, retained foreign body in one, prolapse of the gastric mucosa into the duodenal bulb in three, prolapse of the gastric mucosa into the esophageal ampulla in one, and chronic atrophic gastritis in five. An esophageal diverticulum was present in six patients. The author comments on the results of measurements of the swallowing time, of gastric analysis, of roentgenologic and of esophagoscopic examination. It seemed particularly significant that the esophagitis was always contiguous with the esophagogastric junction. Frequently the disease was patchy in distribution, but always the segment close to the stomach was involved. For a period, patients coming to esophagoscopy were given a drink of fluorescein immediately before they were examined in order to stain eroded areas. Then it was found that erosions are so common in subacute esophagitis that the term erosive was added. Biopsy proved that the lesions extended only about two-thirds through the epithelial layer. Clinical evidence points to acid-peptic corrosion, secondary to transcardial reflux, as the cause of the disease. The frequency with which esophagitis occurs with hiatus hernia, pregnancy, and prolonged vomiting suggests an association with cardial incompetence. However, achlorhydria is not infrequently encountered, and at times the esophageal troubles begin only after surgical procedures designed to reduce acid production. In the present series efforts to control gastric acidity and to discourage nocturnal regurgitation had no effect on the gross morphological evidence of disease. The histopathological examination shows an epithelial layer that is normal except for superficial erosions. The inflammatory infiltrate involves the submucosa, that is, the disease is submucosal, not on the surface. These facts do not permit unreserved acceptance of acid-peptic corrosion as the cause.

The Effect of Prolonged Administration of Large Doses of Sodium Bicarbonate in Man. G. M.-T. van Goidsenhoven, O. V. Gray, A. V. Price and P. H. Sanderson. Clin. Sc. **13**:383-401 (Aug.) 1954 [London, England].

During an investigation into the efficacy of continuous administration of milk containing sodium bicarbonate as a treatment for gastric or duodenal ulcer, observations were made on the amounts of bicarbonate required to keep the pH of the stomach contents at pH 4 or over in ulcer cases. Whereas in the case of gastric ulcer a daily bicarbonate intake of 20 to 40 gm. was usually sufficient, patients with duodenal ulcer generally required 80 to 100 gm. per day. The present paper describes the effects of doses of up to 140 gm. daily for periods of up to three weeks, with special reference to renal function and to electrolyte and acid-base balance. The subjects were 33 patients with gastric or duodenal ulceration, of whom 25 were males and 8 females. Their ages ranged from 19 to 74. One patient had carcinoma of the bronchus, and one had benign essential hypertension; in the remainder there was no other abnormality. The daily dose of sodium bicarbonate was dissolved in 3 liters of milk and administered through a fine-gauge rubber gastric tube at a constant rate throughout the 24 hours. The usual duration of this treatment was three weeks, during which most of the patients were given, in addition, as much of a modified Meulengracht diet as they wished. It was found that doses of up to 140 gm. of sodium bicarbonate daily have been given without ill-effect. Marked alkalosis with increases in plasma carbon-dioxide and pH developed, but adverse symptoms were few and trivial. Persistent albuminuria occurred in one patient, but otherwise there was no evidence of renal damage. Observations on the clearance of inulin and "endogenous" creatinine indicated that the glomerular filtration rate is increased when sodium bicarbonate is given and decreased, often to subnormal levels, after it is withdrawn. Balance studies indicated that patients made alkalotic in this way retained large amounts of sodium; from inulin space determinations it appeared that most of this sodium is accommodated in a greatly expanded extracellular space. Calculation shows that, if this is true, considerable amounts of chloride must enter the extracellular space from sources within the body, presumably cells. Reasons are given for supposing that alkalosis per se rarely, if ever, causes renal

damage, and that the renal failure commonly seen in clinical alkalosis is usually the result, not of the alkalosis, but of the attendant dehydration and renal ischemia. Two cases of pyloric stenosis are described in support of this view. These cases also illustrate the severe limitation imposed on renal bicarbonate excretion by fluid depletion and a fall in glomerular filtration rate.

A Five-Year Assessment of Patients in a Controlled Trial of Streptomycin in Pulmonary Tuberculosis. W. Fox, I. Sutherland and M. Daniels. Quart. J. Med. **23:**347-366 (July) 1954 [Oxford, England].

All the 107 patients in the first controlled clinical trial of streptomycin in the treatment of pulmonary tuberculosis have now been followed for five years or until death. The patients, who were young adults with acute bilateral progressive pulmonary tuberculosis of recent origin, were allocated at random to treatment with 2 gm. of streptomycin daily for four months in bed (55 S patients), or to treatment with rest in bed only (52 C patients). At the onset of the trial in 1946 the inclusion of the control series was ethically justified by the limited supplies of streptomycin. Although at the end of six months 7% of S patients and 27% of C patients had died, this initial benefit to the S patients was not maintained, and at the end of two and a half years 53% of the S patients were dead, compared with 63% of the C patients. There was little further mortality in either series during the remainder of the period. At five years, 57% of the 23 surviving S patients had arrested disease, and 65% had returned to full activity; the corresponding figures for the 17 surviving C patients were 29% and 47%. Among the survivors, 86% of the S patients showed considerable or exceptional radiographic improvement, compared with 53% of the C series. The major radiographic improvements in each series were resolution of lesions and disappearance of cavitation. The outcome of the disease in each series was less favorable in patients who had extensive cavitation, high pyrexia, high erythrocyte sedimentation rate, or extensive zonal involvement of the lungs on admission to the trial. It was also much less favorable in patients who deteriorated radiographically or clinically in the first four months or in whom organisms highly resistant to streptomycin developed within the first six months. The grave prognosis for patients with this type of disease, when treated only with rest in bed, illustrates the importance of starting treatment with a powerful chemotherapeutic combination as soon as the diagnosis has been made.

Recent Trends in Survival of Patients with Respiratory Tuberculosis. C. R. Lowe. Brit. J. Prev. Soc. Med. **8:**91-98 (July) 1954 [London, England].

Data on survival were collected for all cases of respiratory tuberculosis notified from the city of Birmingham during each of the years 1930, 1935, 1940, 1945, 1947, 1949, 1950, and 1951. Of cases notified in 1930 and 1935, three-fifths survived for at least 12 months, about one-third for 5 years, and one-fifth for 10 years. Survival rates for 1940 were even poorer, but postwar rates showed a remarkable improvement. For example, the proportion of patients who survived for 12 months was 63, 71, 84, and 90% for 1935, 1947, 1950, and 1951, respectively. A similar improvement was evident whatever the stage of the disease. The proportions of group 3 (advanced cases) patients still alive 12 months after notification were 36, 44, 59, and 73% for 1935, 1947, 1950, and 1951, respectively. Male survival rates were higher than female rates for those in disease group 1 and for the younger age groups and lower for those in disease groups 2 and 3 and for the older age groups.

Observations on Insulin Requirement in Kimmelstiel-Wilson Disease. R. M. Fawcett. Journal-Lancet **74:**327-330 (Sept.) 1954 [Minneapolis].

Fawcett presents the case of a patient whose insulin requirements over a period of several years showed such a wide range that his case serves to illustrate two equally poorly understood phenomena, insulin resistance and apparent amelioration of diabetes in the presence of Kimmelstiel-Wilson disease. Until May, 1948, the diabetes of this man had been fairly well controlled with from 50 to 70 units of protamine zinc insulin injection a day. Then, for no apparent reason, his diabetes became severer, with increased thirst, weight loss, 4 plus urine sugar, and blood sugar of 351 mg. per 100 cc., with the patient fasting, in spite of steadily increasing his insulin dosage. At that time he first showed blood pressure elevation, increased retention of urea nitrogen, and moderate anemia. Even with his diabetes thus out of control, he showed no acetone or diacetic acid in his urine. In June, 1948, despite 180 to 200 units of insulin each day, most of the tests of his urine showed results of 3 plus; his basal metabolism rate, chest roentgenogram, and other studies in search of the cause of this increased insulin requirement were all normal. In August of the same year he was relatively free of glycosuria, with therapy of from 180 to 200 units of insulin daily. Between September, 1948, and March, 1949, his insulin requirement fell steadily, and by April, 1949, his blood sugar and urine sugar were normal with administration of 18 units of insulin each day. In August, the therapy was 6 units of protamine zinc insulin injection a day. His anemia was becoming a little severer and completely unresponsive to medication. In March, 1952, insulin therapy was stopped and the patient's blood sugar remained normal. About a year later the patient again required 6 units of protamine zinc insulin injection daily, and now he showed evidence of increasing renal insufficiency and a blood pressure of 170/90 mm. Hg. Clinical findings did not support a diagnosis of adrenal cortical insufficiency or suggest a destructive lesion of the anterior pituitary gland. The author reviews the literature on insulin resistance, which revealed among other factors that insulin-resisting antibodies are the probable cause of insulin resistance in some patients and that the cause of many cases of insulin resistance remains unknown. In commenting on the amelioration of diabetes by Kimmelstiel-Wilson disease, he points out that instances of modification of diabetes in association with albuminuric nephritis were reported as early as 1886, and in 1905 it was stated that clinicians occasionally observed the disappearance of diabetic glycosuria with the advent of renal insufficiency. Since then, however, this problem has received little attention, and the basic metabolic effect accounting for the apparent amelioration of diabetes, in terms of insulin requirement, and the relative absence of ketosis in the presence of the Kimmelstiel-Wilson type of renal lesion is as yet unknown.

Studies on the Control of Hypertension by Hyphex: V. Effects on the Course of the Malignant Stage. H. A. Schroeder, J. D. Morrow and H. M. Perry Jr. Circulation **10:**321-330 (Sept.) 1954 [New York].

Continued, combined oral administration of hexamethonium chloride and hydralazine, for which the term hyphex has been used, was given a therapeutic trial in 106 patients in malignant stages of hypertension who were followed for from 15 to 36 months. Of 28 of these patients who failed to continue the use of one or both drugs for various reasons, 25 (89%) died of the complications of hypertension. Ten patients showed symptoms and findings of uremia secondary to nephrosclerosis; hyphex therapy did not influence the course of the disease in these patients, and all of them died. Of the remaining 68 patients who had not progressed to the point of uremia, 14 (21%) died in the course of the treatment with hyphex, and in 11 of these death resulted from other causes than direct hypertensive complications. Of the remaining 54 patients who are still living with hypertension controlled by adequate treatment, 16 have disease in early malignant stages, 18 in severe malignant stages but with adequate renal function, and 20 have renal insufficiency. Of the 20 with renal insufficiency, 11 have been treated with hyphex for 30 to 36 months, 6 for 24 to 30 months, and 3 for 18 to 24 months; thus 17 patients with nitrogen retention have been given hyphex therapy for 24 months or more and have remained in apparent good health. Controlled hypertension is, therefore, compatible with life for at least 15 to 36 months, even when the malignant stage has supervened. The high death rate in the patients discontinuing therapy indicates the necessity for continuation of treatment. The relatively high death rate from nonhypertensive causes in those on therapy stresses the severity of the generalized disease and susceptibility to other fatal disorders, especially when cardiovascular and renal breakdown has oc-

curred. Severe renal insufficiency is usually irreversible and uremia is always irreversible. Signs common to the malignant stage of hypertension can be reversed and do not recur during the period of observation if the blood pressure is controlled at "reasonable" levels. Patients with severe cardiovascular and renal disease may die of other causes when hypertension is treated. There is no evidence that the necrotizing arteriolar lesions of malignant nephrosclerosis can be reversed, but the authors' observations suggest that occasionally they may not develop when the blood pressure is lowered for several months in the presence of slowly progressive azotemia.

Effect of Weight Reduction upon the Blood-Pressure of Obese Hypertensive Women. A. P. Fletcher. Quart. J. Med. **23**:331-345 (July) 1954 [Oxford, England].

It has been demonstrated that obese persons show a greater incidence of hypertension than do persons of normal weight, and the hypothesis has been advanced that weight reduction would lower the blood pressure of obese hypertensive subjects. The results of many investigations designed to confirm or refute this hypothesis have been published, but the value of these studies is difficult to assess because of lack of control groups and of disregard of other factors likely to induce errors in blood pressure readings. The investigations reported here were designed to obviate these defects. In order to eliminate the influence of sex, the experimental group included only women, since these far outnumbered the obese men attending the outpatient department at the London hospital at which Fletcher's studies were carried out. Women were classified as obese when their weight was at least 20% in excess of their maximum ideal weight. They were classified as having systolic hypertension if the systolic blood pressure exceeded 150 mm. Hg on each of the first three blood pressure readings and as having diastolic hypertension if the diastolic blood pressure exceeded 100 mm. Hg under similar circumstances. Weight was reduced by prescribing a 600 calory diet and trying to persuade the patients to keep to it. A more liberal diet of 1,000 calories was usually allowed toward the end of treatment. Inspection of the weight-loss data suggests that even the successfully treated patients in fact ingested a diet nearer to 1,000 than to 600 calories. The obese women whose weight was reduced experienced a fall of both systolic and diastolic blood pressure, which was statistically highly significant when compared with a similar group who failed to lose weight. Although blood pressure was measured by the indirect method, the experiment was designed to give an estimate of the error introduced through the decrease of arm girth owing to loss of weight. This experimental estimate was compared with a second estimate obtained by measurement of the arm girth before and after weight reduction. These two estimates of error being found to agree, the observed falls of blood pressure in the group whose weight was reduced were corrected to allow for the error of the indirect method of blood pressure estimation. The corrected fall of blood pressure in the group of hypertensive obese women whose weight was reduced, when compared with the fall of blood pressure in the similar group who failed to lose weight, was found to be statistically highly significant. It was concluded that weight reduction in this group of obese hypertensive patients had resulted in a true fall of blood pressure. Calculation of the number of patients who had attained normal levels of blood pressure at the end of the experiment showed that the difference in favor of the group in which weight was reduced was significant for systolic blood pressure and also significant for diastolic blood pressure. It was concluded that obesity had been of causal importance in the hypertension of the group of women whose weight was reduced.

Hexamethonium Treatment of Arterial Hypertension. V. Rønnov-Jessen. Danish Med. Bull. **1**:106-110 (Aug.) 1954 (In English) [Copenhagen, Denmark].

Hexamethonium is an effective preparation for reduction of blood pressure and when applied in suitable cases may give both subjective and objective improvement. The treatment is complicated, as the drug must be administered subcutaneously or orally and subcutaneously in most cases, and the side-effects are often marked. The patients must therefore be selected with care and treatment started only when considerable hypertension and pronounced subjective symptoms are present. Prolonged treatment can be carried through only with patients able to cooperate. Of 28 patients with severe fixed hypertension treated with hexamethonium, three discontinued treatment because of failure to improve, and one patient died from uremia after six months. The remaining 24 were treated for from 12 to 34 months, or an average of 16 months. Reduction of blood pressure of an average of 55/35 mg. Hg, especially in the upright position, occurred in all. In most cases improvement in the subjective symptoms of hypertension took place, and in a number of cases there was also reduction of the objective symptoms. The most important side-effects, orthostatic vertigo, misty vision, and fatigue, often diminished during continued treatment. The principal contraindications are recent thromboses in brain and heart. Patients with signs of marked arteriosclerosis were not treated.

Etiology and Pathogenesis of the Leukemias. H. S. Kaplan. Cancer Res. **14**:535-548 (Sept.) 1954 [Chicago].

The incidence of leukemia seems to be increasing. This paper presents a review of the recent literature on the etiology and pathogenesis of human and experimental leukemia and a hypothetical interpretation of the mechanism of induction of the experimental disease. The term leukemia is used in the broad sense to include evidence pertaining to lymphosarcoma and Hodgkin's disease. The author emphasizes the gaps in our knowledge. The leukemias probably do not all have the same cause, although the mechanisms by which the various forms arise may have much in common. To account for the bulk of human leukemias, it would seem necessary to widen our horizons beyond such agents as radiation and benzol and to look with suspicion on any chemical, drug, or body reaction, such as hypersensitivity, which is capable of causing severe injury to hematopoietic tissues. There is need for additional studies on the preleukemic phase, as well as on the epidemiology of the leukemias; the fragmentary information now available indicates that the leukemias do not spring abruptly from previously normal tissues but burst into flame, as it were, from a smoldering preexistent hematopoietic disorder of varying origin and morphology. Whereas most human evidence pertains to myelogenous leukemia, experimental work to date has been primarily concerned with lymphatic leukemia and lymphosarcoma. The evidence reviewed established the fact that the induction mechanism is an indirect process reflecting the complex interrelationship of multiple factors. The author suggests a hypothesis that implicates a chronic disturbance of normal tissue growth equilibrium as the major factor in leukemogenesis.

Homozygous Hemoglobin C: A New Hereditary Hemolytic Disease. D. W. Terry, A. G. Motulsky and C. E. Rath. New England J. Med. **251**:365-373 (Sept. 2) 1954 [Boston].

Homozygous hemoglobin C disease is a recently identified hereditary hemolytic disorder characterized by the presence of 100% hemoglobin C. Hemoglobin C is an abnormal hemoglobin electrophoretically different from normal (A), fetal (F), sickling (S), and D hemoglobin. A case of the disease in a 44-year-old Negro woman is described. Her complaints were weakness, fatigue, and dyspnea on exertion. The findings in her case were compared with those in three previously reported cases. Homozygous hemoglobin C disease occurs in Negroes of both sexes. Splenomegaly is usually present. Arthralgia and cholelithiasis are variable findings. The characteristic hematological features are as follows: mild normochromic and normocytic or microcytic anemia, many target cells and occasional nucleated red cells in the peripheral blood, increased osmotic resistance of red cells to hypotonic sodium chloride solution, normal number to mild elevation of reticulocytes, normal to slightly elevated serum bilirubin, normoblastic hyperplasia of the bone marrow, an intracorpuscular hemolytic defect with an erythrocyte life span of 40 to 50 days, and a characteristic electrophoretic pattern of hemoglobin. The C trait is not associated with hematological abnormalities other than target cells and increased osmotic resistance. Arthralgia was observed in three of the four patients with C trait. Genetic study of this

patient's family and other data show that the inheritance of hemoglobin C, similarly to that of hemoglobin S, is determined by a gene whose effect can be demonstrated by hemoglobin electrophoresis in both the heterozygous and the homozygous state. Presence of the gene for hemoglobin C on two allelomorphic chromosomes presumably produces homozygous hemoglobin C disease, whereas a single dose of the gene controlling hemoglobin C synthesis occupies the same chromosomal locus as the gene for hemoglobins A or S. Calculations based on the approximate occurrence of the C trait in the Negro population (2.5%) suggest a frequency of homozygous hemoglobin C disease of 0.0172% or 1 in 6,000 Negroes. Hemoglobin C disorders must be differentiated from hereditary leptocytosis and other conditions associated with target cells. Hemoglobin electrophoresis is required for definite differentiation. Homozygous hemoglobin C disease should be considered in all cases of unexplained anemia, obscure arthralgia, and idiopathic splenomegaly in the Negro.

Action of Hyaluronidase on Erythrocyte Sedimentation Rate. C. Bussolati. Minerva med. **45**:340-342 (Aug. 18) 1954 (In Italian) [Turin, Italy].

The effect of hyaluronidase on the erythrocyte sedimentation rate was studied in 30 patients, some of whom had chronic rheumatism and some chronic arthritis. The sedimentation rate was determined with Westergren's method immediately before and two hours after the subcutaneous or intramuscular injection of 250 viscosity units of hyaluronidase. Of the 18 patients who served as controls, 5 were given an injection of isotonic sodium chloride solution, 5 one of a histamine-antagonizing agent, and 5 one of distilled water. In the other three the needle was inserted but no injection was given. Two hours after the injection of hyaluronidase there was no change in the erythrocyte sedimentation rate of two patients. In the others an increase was observed that ranged from 10.8% to 98.8% of the initial value. The individual response to the enzyme varied greatly, and the varying capacity of the tissue to inhibit hyaluronidase or not may account for the differences. The greatest increase was 98.8% of the initial value, and it was observed in a patient with chronic deforming polyarthritis in the subacute phase whose initial sedimentation rate was 26.5 mm. per hour. As a rule, the rise was lowest in patients with a very low sedimentation rate before the injection was given. Marked and constant variations did not occur in the control patients except for those who were given an injection of distilled water. In fact, the introduction of only 5 cc. of distilled water into the blood stream of patients with Katz's values only slightly above normal can produce increases of the sedimentation rate two hours after the injection and sometimes decreases of it. It is difficult to say whether the increased sedimentation rate that followed the injection of hyaluronidase was due to an elevation of hyaluronic acid in the blood or to an increase of the products of its decomposition. Studies are now in progress to determine the relationship between hyaluronidase, hyaluronic acid, and plasma.

SURGERY

The Results of Surgical Treatment of Bronchiectasis. J. A. Simpson. M. J. Australia **2**:252-254 (Aug. 14) 1954 [Sydney, Australia].

The course of bronchiectasis, or permanent dilatation of the bronchial tree, usually associated with infection in the lungs, is often characterized by repeated acute episodes that lead to loss of time from work or school and that may even prove fatal. Experience at the thoracic unit of the Royal Perth Hospital shows that surgical treatment, which offers the only hope of cure in this condition, also produces better symptomatic relief than conservative treatment. The results obtained in 94 of 138 patients who have been operated on since 1946 were satisfactory in 81 (86.2%); 6 patients died; 7 are lost to follow-up; and in the remaining 31 treatment has either not been completed or the follow-up period is inadequate. The presence of bronchiectasis may be suggested by the history, clinical findings, and plain roentgenograms, but bronchograms outlining all segments of the bronchial tree must be obtained before a definite diagnosis can be made or a rational plan of treatment arrived at. No patients in whom the condition was secondary to carcinoma, adenoma, tuberculosis, or the presence of a foreign body were included in this series. Treatment should be designed to relieve symptoms: cough, sputum, hemoptysis; to prevent the appearance of complications: empyema, cerebral abscess, and especially repeated attacks of acute pneumonic infection; and to prevent the spread of the disease, which may render an operable condition inoperable. Three groups of patients should be excluded from surgical treatment: (1) those with a mild degree of bronchiectasis producing only minimal symptoms; (2) those in whom the disease is so extensive that removal of the bronchiectatic areas would leave insufficient lung tissue; and (3) those whose age or general condition contraindicates the operation. Patients for whom an operation is planned should first be given active physiotherapy to drain the infected lobes and to increase the vital capacity. This is an important part of the treatment and may be continued for two or three months if necessary in order to reduce the amount of sputum to the absolute minimum. A "dry" patient who has learned how to breathe properly and cough productively before operation will have a much smoother postoperative course. All healthy lung tissue should be preserved, especially when the disease is bilateral, and the side most affected should be operated on first, because so much improvement sometimes results that a second operation becomes unnecessary. Complications such as atelectasis, bronchial fistula and empyema, effusion or empyema without fistula, and hemorrhage may occur, but they are usually not serious and in these patients, at least, they made little difference in the ultimate result. Some months may elapse before the full benefit of the operation becomes evident, presumably because healing of the associated bronchitis takes place gradually after the pool of infection in the lung has been removed. Cough, which persists for some time, may disappear completely in the course of a few months, and exercise tolerance improves considerably. The results are best in patients of the 10 to 25 year age group, who are old enough to cooperate intelligently in their treatment and young enough to compensate for the loss of lung tissue.

Resection of Lung Tissue in Treatment of Pulmonary Tuberculosis. P. R. Bull. M. J. Australia **2**:169-173 (July 31) 1954 [Sydney, Australia].

Bull discusses observations on 200 tuberculous patients who had lung tissue resected. The first 100 resections were completed by November, 1951, and these patients have been followed up for at least 18 months. Whereas in 1947 surgical treatment was carried out in 22 patients, including not a single resection, in 1953 the number was 157, of which 120 were resections. Thus resection has been used increasingly as an alternative to thoracoplasty and other forms of major collapse therapy. The following are listed as indications for resection, provided the remaining lung tissue is free from disease: (1) large tuberculoma, (2) "blacked out" destroyed lung, (3) bronchostenosis with infection distal to stenosis, (4) "resistant" lower lobe cavities, or (5) "failed thoracoplasty." Patients with the first three conditions would not be benefited by thoracoplasty; "resistant" lower lobe cavities have in the past been treated by surgical collapse, but most surgeons now prefer resection. After "failed thoracoplasty," resection is preferred to revision of the thoracoplasty. Whether resection should be performed in preference to thoracoplasty for apical disease is still a matter for argument. At the author's hospital it is used in preference to thoracoplasty, except when there has been widespread involvement of one or both lungs and the patient has been left with a retracting or cavitated apical zone and scattered areas of probably quiescent tuberculosis in other parts of the lung fields. Until recently it was customary to delay major surgical procedures until prolonged sanatorium treatment with antibacterial substances and minor collapse measures had been tried; but now, when it seems likely that localized destructive areas of disease will resist such measures, operation is undertaken early with considerable saving of time for the patient. No resection is undertaken until the patient has had at least a month to six weeks' antibacterial treatment and radiological observation. In the first 100 patients, of whom 3 had two operations, 76 were subjected to pneumonectomy and 27 to lesser resections, and in the second series there were 24 pneumonectomies and 76 lesser resections. These

figures show the broadening indications for resection, which aims at removal, as far as possible, of all the diseased lung tissue; but on occasion only the worst areas of disease are removed. In good-risk patients the mortality and morbidity rates are low (1.8% mortality); in poor-risk patients they are considerably greater (37% mortality), but resection offers the patient the only chance of worthwhile survival. The occurrence of bronchopleural fistula and empyema can be minimized by meticulous bronchial closure with burial of the stump, together with obliteration of the residual space.

Extension of Gastric Cancer in the Intramural Lymphatics and Its Relation to Gastrectomy. M. M. Zinninger. Am. Surgeon **20:**920-927 (Sept.) 1954 [Baltimore].

Operative and necropsy specimens from 101 patients with gastric cancer were studied microscopically to determine the frequency with which the duodenum and the esophagus are invaded by such cancers, the extent of the invasion when it occurs, and the channels by which it takes place. Examination of the sections also disclosed the degree of carcinomatous extension in the wall of the stomach itself. The microscopic spread of cancer of the stomach, though sometimes minimal, may be extensive. Many of the specimens examined showed extensions of cancer cells in the wall of the stomach for considerable distances (up to 6 cm.) away from the apparent gross limits of the tumor. Extension in the submucosa took place through the submucous lymphatics, as shown by the appearance of cancer cells in their lumina. Extension in the muscularis, seen in linitis plastica, leads to thickening and induration of the gastric wall and can, therefore, be detected more easily than submucous extension; in most instances, it does not appear in the lymphatics. Subserosal extension, on the other hand, is usually recognizable in the lymphatics. It is generally less widespread than that in the submucosa, although in some cases it was detected at distances of several centimeters away from the gross edge of the tumor. Extension into the duodenum and the esophagus is almost always recognizable only by microscopic study and is not apparent on gross examination or palpation. Duodenal extension, which takes place chiefly by direct infiltration and through the subserosal lymphatics, is often of minor importance; thus, in 18 of the 43 specimens in which it appeared it was just through the sphincter. Esophageal extension, on the other hand, showed a range of from 2 to more than 3 cm. Invasion of the duodenum occurs in nearly 50% of the patients with cancers in the distal half of the stomach; consequently, operations for the removal of cancers in the antrum or in the fundus in the pyloric half of the stomach should include the removal, not only of the pylorus, but also of a substantial segment of the duodenum. Not less than 3 cm. of the esophagus should similarly be removed in operations for cancers in the cardiac half of the stomach. The number of five year cures obtained by total gastrectomy does not seem to be significantly higher than that obtained by subtotal gastrectomy, and it may well be that the biological nature of the particular cancer is more important to the result than the extent of the operation. Cancers of the stomach with comparatively little tendency to invade or infiltrate are the ones most likely to be cured by radical but subtotal resection; those that are invasive and infiltrative from the start can seldom be cured even by the most drastic treatment.

Inoperable Pulmonary Carcinoma. H. Barthel. Thoraxchirurgie **2:**101-110 (Aug.) 1954 (In German) [Stuttgart, Germany].

Three hundred patients with a diagnosis of pulmonary carcinoma were observed in slightly more than two years at the University Clinic in Hamburg, and in 175 of these the lesions proved to be inoperable. Exploratory thoracotomy was necessary to establish inoperability in 74 of these patients. There are three causes of inoperability: (1) the presence of distant metastases or of pleural carcinosis, (2) clinical contraindications, and (3) extension of the tumor to neighboring organs. Distant metastases were responsible for inoperability in 34 of the 175 inoperable pulmonary cancers and pleural carcinosis in 31. Clinical contraindications existed in 65 patients. These included: heart lesions with or without decompensation, severe disturbances in the cardiac rhythm, and impairments of the heart or of the circulatory apparatus that involve cardiovascular insufficiency. Roentgenologic demonstration of pulmonary stasis, as well as symptoms of pulmonary stasis or latent edema, are important in ascertaining the circulatory condition. If the electrocardiogram or other tests indicate myocardial lesions, operation may only have to be postponed for two or three weeks, during which the patient may be prepared by dietetic, drug, and other treatments. After discussing the significance of elevated venous pressure, the author shows why and how the functional capacity of the kidneys must be ascertained before pulmonary resection is resorted to. In seven patients hypertrophy of the prostate with renal damage owing to stasis necessitated postponement of the operation, and in four patients operation was dispensed with because of nephrosclerosis. The determination of the respiratory function of the lungs is the most important examination for ascertaining the operability of pulmonary cancer. In this connection the author mentions spirography: examination of the gas exchange in the arterial blood. At his clinic the determination of the arterial oxygen pressure according to Barthel's method is preferred. The pulmonary carcinomas that are no longer operable because the tumor has extended to neighboring organs frequently cannot be recognized without thoracotomy. While mediastinal venography and paralysis of the recurrent nerve provide valuable information, there is as yet no method that definitely establishes whether and to what extent a pulmonary tumor has extended beyond the pericardium. Bronchoscopy has increased in importance since it is being carried out under general rather than local anesthesia. In this form it is less trying for the patient and can be done more leisurely with various optical aids. Bronchoscopy alone established inoperability in 19 patients. Thoracoscopy revealed pleural dissemination of the pulmonary cancer or its extension into hilus or heart in eight patients. Although adequate use of these methods has reduced the incidence of exploratory thoracotomy at the author's clinic from 42.3 to 25.4%, in a certain percentage of patients it will remain unavoidable.

An Evaluation of the Role of Vagotomy in the Treatment of Duodenal Ulcer. H. K. Ransom. Am. Surgeon **20:**942-951 (Sept.) 1954 [Baltimore].

Patients with chronic duodenal ulcer treated by vagotomy at the University of Michigan Hospital from July 1, 1947, to Dec. 31, 1951, fall into three groups: (1) those in whom vagotomy alone was performed, (2) those in whom it was combined with a gastric drainage operation, and (3) those in whom it was combined with gastric resection. Bleeding, obstruction, and failure to respond to medical treatment, which were the indications for the operation, commonly occurred in combinations of two or even three in a patient. A diagnosis of gastric neoplasm was seriously considered in several instances, but in every case the lesions found at operation were stated by the pathologist to be benign. Several of the 13 patients in group 1 available for study, though listed as having undergone vagotomy alone, had actually had earlier operations of a different character for the relief of their condition, and additional operations were subsequently performed in various others. Vagotomy was, therefore, the sole operative procedure in five patients only; of these, two were improved, two unimproved, and one well. Evaluation of group 1 as a whole confirmed the opinion already held that vagotomy alone produces poorer results than vagotomy combined with either a drainage operation or gastrectomy. Its chief field of usefulness apparently lies in the treatment of marginal ulcers after adequate gastric resection. Vagotomy combined with gastroenterostomy, though not the best procedure, is definitely indicated for poor risk patients or those in whom pathological changes would prevent secure closure of the duodenal stump if resection were to be undertaken. Vagotomy with gastric resection, which appears to be superior to any other procedure now in use, gave the highest percentage of satisfactory results, 93% of 28 patients, as compared to 69% of 13 patients for vagotomy alone and 85% of 33 patients for vagotomy combined with a gastric drainage operation. The protection afforded by vagotomy may make it possible to perform a smaller resection than has heretofore been deemed adequate, thus substantially reducing many of the objectionable features of subtotal gastrectomy. The judicious use of the two procedures, i. e., limited gastric resection with vagotomy in suitable patients and

gastroenterostomy with vagotomy in patients in whom difficulty is anticipated, may be expected to produce a high percentage of satisfactory results with an agreeably low operative mortality rate.

Fate of Esophageal Hiatus Hernia: A Clinical and Experimental Study. J. L. Sprafka, M. Azad and I. D. Baronofsky. Surgery **36:**519-524 (Sept.) 1954 [St. Louis].

Of 149 patients with small esophageal hiatus hernias who were followed by roentgenologic examination for periods up to 18 years, 130 were followed from 1 to 5 years, and 19 were followed for more than 6 years. Seventeen (13%) of the 130 patients and 11 (58%) of the 19 patients showed progression from small to large hernias. Of 61 patients with large hiatus hernias who were studied for pathological changes demonstrable by roentgenologic examination, 17 patients (28%) showed evidence of serious complications such as ulcer, esophagitis, or esophageal stricture singly or in combination in the herniated portion of the stomach. Large and small esophageal hiatus hernias were experimentally produced in dogs in an attempt to simulate the so-called paraesophageal or parahiatal type and the so-called sliding type of hiatus hernia observed in man. After a three weeks' postoperative recovery period the dogs were given 30 mg. of histamine-in-beeswax mixture daily in addition to regular kennel food and water ration. Histamine stimulation was continued until the death of the animals, and necropsies were made as soon after death as possible. Results showed that the ulcer diathesis was greatly favored by large hernias. Esophageal hiatus hernia is a potentially serious disorder. Patients with small esophageal hiatus hernias should be kept under constant observation, consideration being given to the early repair of these hernias should enlargement occur and before complications become manifest.

Clinical, Pathological, and Therapeutic Aspects of Tumors of the Thymus. H. Kastrup, W. Kny and W. Wilhelm. Thoraxchirurgie **2:**163-182 (Aug.) 1954 (In German) [Stuttgart, Germany].

Kastrup and associates discuss the various aspects of tumors of the thymus on the basis of observations on seven patients in whom tumors of the thymus were surgically removed. In six of these, five women ranging in age from 22 to 64 years and a man aged 59, the tumors were primary. The clinical symptoms are not characteristic. Signs of displacement like those caused by mediastinal tumors usually predominate. An irritating cough and the feeling of pressure behind the sternum are frequent signs, and tracheostenosis owing to pressure of the thymus may cause mechanical interference with respiration, which may increase to thymic asthma. Clinical symptoms alone do not as a rule permit a diagnosis, but roentgenologic examination is helpful. The tumors are usually located in the anterior mediastinum. At times, thymus tumors may grow into both thoracic cavities. In cases in which the growth is symmetrical the tumor may simulate a pericardial effusion. Tumors of the thymus usually show a definitely local expansion; however, in about one-fourth of the cases the surrounding tissue may become invaded, particularly the large venous trunks within the thorax. These tumors represent a transitional form between benign and malignant growths, because despite their invasive growth they do not cause distant metastases. The differentiation between benign and malignant thymus tumors may prove extremely difficult. When a thymus tumor is removed it is customary to remove the entire thymus, and thymectomy as a rule is well tolerated. Histological studies show that lymphatic and reticuloepithelial elements grow side by side in tumors of the thymus. Early surgical treatment is the treatment of choice, but although radical removal should be the aim, this may sometimes prove impossible owing to invasion of the large venous trunks. The seventh case reported concerned a 4-year-old girl who was hospitalized with a diagnosis of suspected tumor of the thymus, but it was later found that this child actually had a lymphatic leukemia. The authors also comment on the relationship between persistence of the thymus and atrophy of the adrenal cortex and on the fact that a biologically active tumor of the adrenal cortex is accompanied by lymphopenia. Thyrotoxicosis may be accompanied by enlargement of the thymus, and thymus tumors frequently occur in myasthenia.

Congenital Absence of Hemidiaphragm and Use of a Lobe of Liver in Its Surgical Correction. W. E. Neville and G. H. A. Clowes Jr. A. M. A. Arch. Surg. **69:**282-290 (Sept.) 1954 [Chicago].

Operations for congenital defects of the diaphragm should be performed promptly in the newborn infant before there is danger of death from respiratory and circulatory embarrassment or intestinal obstruction. The mortality rate from such procedures has been enormously lowered within recent years. Two cases are reported of congenital absence of a hemidiaphragm in which a lobe of the liver was sutured to the endothoracic fascia in order to separate the abdominal and pleural cavities. Surgical intervention was performed 48 and 24 hours, respectively, after delivery of the infants. The first child was living and well 18 months after operation. The second, who was born after seven and a half months' gestation, died from cardiac arrest at the conclusion of the operation. Subsequently, experimental investigations of the operative procedure were carried out in 16 dogs, 12 of which lived and were healthy. It was found that, although two dogs died from rupture of the suture line after gastric dilatation, substantial pressure was required for rupture. Measures can be taken postoperatively to avert gastric or intestinal postoperative distention. Thoracoabdominal incisions provided good approaches to the operative fields. Bleeding from the liver was not a problem. Once healing is accomplished there is apparently no tendency to diaphragmatic herniation.

Primary Plastic Skin Covering for Third-Degree Burns. J. Böhler. Monatsschr. Unfallh. **57:**249-251 (Aug.) 1954 (In German) [Berlin, Germany].

Böhler shows that primary excision and covering with skin grafts may be the best method of treatment in third degree burns. The operation is performed under sterile conditions within the first hours after the burn, that is, when the wounds are not as yet infected. The skin cover can be transplanted onto healthy tissue, and secondary cicatricial shrinkage, such as is observed after late grafting of granulating wound surfaces, need not be feared. The recognition of the areas of skin that have been completely destroyed by the thermal burn constitutes the chief difficulty in this method. However, in one of the two cases presented in this paper it is pointed out that the portion of skin that had sustained a third degree burn showed a deeper stain on application of iodine than did the areas of second degree burns. The first of the two patients presented was a riveter who sustained a third degree burn over the area of the Achilles tendon when a red-hot rivet fell into his shoe. Immediately after hospitalization the burned skin 4 by 4.5 cm. was cut away and the area was covered with a skin graft from the buttock. Good healing resulted. The second patient sustained third degree burns on the left side of the chest and second degree burns on the arm from an electric cooker. The area of the third degree burn was excised and covered by a graft 9 by 3 cm. in size. This patient could be discharged 20 days after the burn had been sustained and grafted. Although primary excision and grafting produces favorable results in third degree burns of limited extent, it is not advisable for extensive third degree burns.

The Syndrome of Patent Ductus Arteriosus with Reversal of Flow. D. S. Lukas, J. Araujo and I. Steinberg. Am. J. Med. **17:**298-310 (Sept.) 1954 [New York].

The physiological and clinical features of 4 cases of patent ductus arteriosus with reversal of flow presented here and 12 cases selected from the literature are characteristic enough to warrant the designation of a syndrome. Pulmonary arterial hypertension of sufficient magnitude to cause shunting of venous blood from the pulmonary artery into the aorta (mainly the descending portion) is the physiological basis of the condition. The hypertension is related to extensive arteriosclerotic and thrombotic alterations in the pulmonary vessels. The usual clinical features of uncomplicated patent ductus are absent. The continuous murmur is not heard, and the pulmonary blood flow is small. Because of the distribution of the venous shunt there is cyanosis and clubbing of the toes and absent or less pronounced cyanosis and clubbing of the fingers. Right ventricular

hypertrophy is shown by both the roentgenogram and the electrocardiogram. These findings permit the diagnosis to be made clinically. Angiocardiography and cardiac catheterization establish the diagnosis unequivocally, are of aid in excluding coexisting defects, and provide information needed in the decision concerning ligation of the ductus. The limited surgical experience indicates that ligation is hazardous but may be followed by a considerable decrease in the hypertension. Three of the four patients underwent surgical intervention. In two, the operation could not be performed; the third died during operation. The mode of pathogenesis of the pulmonary vascular lesions is unknown, but a large ductus capable of transmitting an extremely large left-to-right shunt early in the course of the disease is an essential factor. Polycythemia accentuates the venous shunt once it is established. Patients with this syndrome are not necessarily in cardiac failure and may live for many years after its onset.

Pulmonary Stenosis with Left to Right Shunt. O. Magidson, R. S. Cosby, S. P. Dimitroff, and others. Am. J. Med. **17:**311-321 (Sept.) 1954 [New York].

A series of 14 patients with the combination of pulmonary stenosis and a defect permitting a left-to-right shunt is reported. These defects were: eight atrial septal defects, two sets of transposed pulmonary veins, three ventricular septal defects, and four patent ducti arteriosi. The clinical features of the cases were in general those of mild or moderate pulmonary stenosis. Electrocardiographic and radiological findings may suggest the presence of an accompanying septal defect. Atrial septal defect with left-to-right shunt occurred in the presence of mild or moderate pulmonary stenosis and a normal left-to-right atrial pressure gradient. A shunt through transposed pulmonary veins may occur in the presence of severe pulmonary stenoses. Patients with ventricular septal defect and pulmonary stenosis appear to fall into two groups: those with slight to moderate elevation of right ventricular pressure and those in which the right ventricular and systemic pressures are similar. Surgically speaking, it may be argued that relief of stenosis in these patients may lead to a great increase in the left-to-right shunt and a failure to gain the expected improvement. A patient of this series who had balanced right and left ventricular pressures derived definite subjective improvement from valvulotomy; further catheterization studies have not been performed on her. Valvulotomy was also advised in the case of a patient who had particularly severe stenosis, this being taken as an indication for operation in the absence of precise knowledge of the subsequent course of the disease in such patients.

Estimation of Surgical Risk in Pneumonectomy: Further Experiences with the Bronchus Blockage Test and with the Two-Phase Blockage of the Main Bronchus and of the Pulmonary Artery During Operation. M. Wenzl and E. Strahberger. Arch. klin. Chir. **278:**388-395 (No. 4) 1954 (In German) [Berlin, Germany].

Pneumonectomy makes great demands on the cardiopulmonary reserve, and the surgical risk is largely determined by the capacity of the remaining lung to meet the respiratory demands. In older persons the functional adequacy of the cardiovascular system plays an important part. In order to ascertain whether pulmonary resection is indicated, it is advisable to imitate the condition existing after pneumonectomy. For this purpose the bronchus blockage test was developed by Auerswald and the authors of this paper. It has been used in 100 cases over a period of more than two years. The passage of air to the diseased lung is interrupted with a blocker, while the behavior of the arterial oxygen saturation is examined by means of an oximeter. The same examination is repeated on the other lung. The majority of the 100 patients who were examined with this method were borderline cases in regard to cardiorespiratory function; they were mostly elderly patients with bronchial carcinoma. In 55 of the 100 patients a functional or a conditioned functional adaptation of the contralateral lung was proved by the behavior of the arterial oxygen saturation during interruption of the air intake of the diseased lung. Three-fourths of 60 patients subjected to radical operation showed functional or conditioned functional adaptation. In cases in which functional adaptation cannot be ascertained with the aid of the bronchial blockage test, another test, namely, the two-phase blockage of the main bronchus and of the pulmonary artery was employed during the operation to further clarify the adaptation capacity of the cardiorespiratory system. This test made it possible to establish suitability for pneumonectomy during operation in 15 of 23 patients. The examination of the absolute value of arterial oxygen saturation showed no essential difference between preoperative and postoperative values. Tests on the ventilatory conditions revealed a certain conformity with the conditions ascertained by the bronchial blockage test.

Hypophyseal Changes Following Electrocoagulation. F. Leicher. Arch. klin. Chir. **278:**301-311 (No. 4) 1954 (In German) [Berlin, Germany].

Leicher says that the percutaneous transfrontal electrocoagulation of hypophyseal tumors was suggested by Bauer in 1950. He employed this method successfully for the first time in a patient with acromegaly, visual disturbances, goiter, hypertension, and diabetic symptoms. The electrocoagulation is carried out with the aid of a local-anesthesia needle, which is covered with celluloid to achieve electrical isolation. Originally the transcranial approach was used, but this was later replaced by the paramedian-transethmoidal approach. The aim of this treatment is the production of an electrocoagulation necrosis 1 cm. in diameter in the hypophyseal adenoma and necrobiosis of the adjoining tumor tissue, but it was hoped that adequate numbers of marginal cells would survive. Encouraged by favorable therapeutic results, which became evident a few days after the coagulation of the hypophysis, Bauer suggested that this method be tried in the treatment of malignant tumors in other parts of the body in the hope that by partial exclusion of the hypophyseal hormones the growth of tumor cells might be arrested. This reasoning places the hypophysis into the center of the process of tumor growth. After Leicher had learned from Bauer that so far no reports had appeared about changes observed in the hypophysis after electrocoagulation, he decided to describe a pseudocyst that he had observed in the anterior lobe of the hypophysis in a man, aged 30, who had died four months after a percutaneous transethmoidal electrocoagulation of the hypophysis that had been carried out in the hope that it might arrest rapid metastatization of a malignant melanoma. Roentgenograms taken at the time of the electrocoagulation showed that the needle was not in the sella turcica but on its lower rim. Sections made through the hypophysis in the horizontal plane revealed a triangular cavity, which was restricted to the anterior lobe. It was established that this was a pseudocyst of the adenohypophysis, with a perifocal zone of debris and hemosiderosis of the capsule; the electrocoagulation had also slightly damaged the posterior lobe of the hypophysis. The pseudocyst proved to be the residual condition of a colliquative necrosis, which had been produced by the cauterization of the hypophysis. With suitable current strength, the electrocoagulation seems quite suitable for the treatment of primary tumors of the hypophysis, but whether it will influence the growth of tumors distant from the hypophysis will require further proof.

Occlusive Disease of the Aorta and Its Treatment by Resection and Homograft Replacement. M. E. DeBakey, O. Creech Jr. and D. A. Cooley. Ann. Surg. **140:**290-310 (Sept.) 1954 [Philadelphia].

Thrombo-obliterative disease of the terminal aorta is being recognized with greater frequency, largely as a result of the wider use of aortography. Two types of therapy have been employed, namely, methods purely palliative in nature, such as lumbar sympathectomy and aortic resection, and those that restore vascular continuity and normal blood flow. In the latter category are thromboendarterectomy and restoration of the aortic bifurcation with homograft replacement. This report is concerned with observations made on 22 patients with thrombo-obliterative disease of the aorta treated by resection of the aortic bifurcation and replacement with a lyophilized aortic homograft. Ten patients had a localized occlusive process, and 12 had partial aortic occlusion. All the patients were white males, ranging in age from 33 to 63 years, with an average age of 49. Those with complete occlusion were almost a decade younger than those with incomplete occlusion. The clinical manifesta-

tions consisted essentially of slowly progressive symptoms of arterial insufficiency of the lower extremities in addition to sexual impotence and hypertension in about one-third of the patients. The average duration of symptoms for those with complete occlusion was four and a half years, and for the group with incomplete occlusion two and a half years. Aortography confirmed the clinical impression in the patients with complete aortic occlusion and established the presence and extent of the partial occlusive process. Aortic bifurcation homografts were implanted in all patients. In addition, homografts were placed in the iliac bifurcation in four, in the external iliac artery in three, in the common femoral artery in two, and in the superficial femoral artery in one. On the basis of pathological studies, the resected specimens were classified into two groups: those with complete and those with partial occlusion. The gross and histological appearance of the vessel wall and of the occluding thrombi suggested that the thrombo-obliterative process began in the common iliac arteries and in the region of the aortic bifurcation and involved more proximal segments by propagation. There were two deaths in the series. All but four of the remaining patients experienced striking improvement, with complete restoration of pulses in the lower extremities. On the basis of these observations it appears that the complete occlusive form of thrombo-obliterative disease is generally confined to the terminal aorta and bifurcation and is ideally suited for resection with homograft replacement. The partially occluded process, however, tends to be much less localized, and, when associated with peripheral arteriosclerosis obliterans, the procedure of aortic resection and homograft replacement may be contraindicated.

Physiologic Basis for Utilization of Esophagocardiomyotomy in the Treatment of Achalasia. P. Nemir Jr. and H. R. Hawthorne. J. Thoracic Surg. **28:**247-258 (Sept.) 1954 [St. Louis].

Esophagocardiomyotomy was carried out with the modified Heller procedure in 25 patients with achalasia of the esophagus. One of the patients died of a cardiovascular accident on the fifth postoperative day. All of the surviving 24 patients, who were followed for from four months to six years, were relieved of their symptoms of dysphagia. Twenty-one patients obtained excellent results, with complete relief of symptoms and ability to take a full diet. Three of the patients had postoperative difficulties in the form of delayed gastric emptying, regurgitation, esophagitis, and/or hemorrhage. In order to study the manner in which esophagocardiomyotomy exerts its beneficial effect, esophageal motility studies were performed on 15 patients with achalasia on whom esophagocardiomyotomy was performed. These studies were made preoperatively and at varying intervals up to two years postoperatively. With the patient in the fasting state, a triple lumen, triple ballooned tube was passed into the stomach under fluoroscopic guidance and with the aid of compound effervescent (Seidlitz) powders. The lower balloon was placed into the cardiac portion of the stomach, the middle balloon in the esophagogastric junction, and the upper balloon in the upper or midesophagus. The inflated balloons were connected to a four-channel electromanometer, and esophageal contractions at the esophagogastric junction and in the upper esophagus were recorded on Perma paper. In a second phase of the study the patient was given a barium swallow and after the column of the barium was in the stomach, the patient was placed in the Trendelenburg position and the Vasalva maneuver was performed to determine whether regurgitation was present postoperatively. Results showed that after esophagocardiomyotomy there is no alteration of the deranged esophageal motility. Careful analysis of the preoperative and postoperative tracings showed little or no difference. In several of the postoperative tracings the amplitude of contractions was slightly increased, but this finding was not consistent and varied with the amounts of air employed to inflate the balloons. Fluoroscopic study at the time of barium swallow demonstrated the presence of regurgitation from the stomach into the esophagus in 50% of the patients postoperatively, while regurgitation is almost an invariable accompaniment of operations in which the esophagogastric junction is destroyed. Usually there was a rapid and free regurgitation with the patient in the Trendelenburg position. Esophagocardiomyotomy with its resulting scar probably exerts its beneficial effect by acting as a barrier to the circus movement at the lower end of the esophagus, thereby relieving a functional obstruction and permitting better emptying. Postoperative complications after esophagocardiomyotomy were less frequent and less severe than after esophagogastrostomy or actual resection of the esophagus. Since the postoperative difficulties are undoubtedly a function of regurgitation, it may be assumed that the decreased incidence of complications was caused by the decreased incidence of regurgitation. It is postulated that a derangement or disorganization of the intrinsic neural mechanism, rather than an absolute absence of the nerve plexuses, is responsible for the disordered motility pattern.

Carcinoma in the Gastric Stump as a Late Problem of Ulcer Surgery. R. Kühlmayer and O. Rokitansky. Arch. klin. Chir. **278:**361-375 (No. 4) 1954 (In German) [Berlin, Germany].

Kühlmayer and Rokitansky review the problem of carcinoma of the gastric stump after gastric resection on the basis of the autopsy material of the Pathologic Anatomic Institute of the University of Vienna from 1934 to 1952. Gastric carcinoma was found in 5.9% of all patients who came to autopsy, and 40 cases of carcinoma were found in 363 autopsied cases in which gastric resections had been carried out. This is equivalent to 11%, i. e., carcinoma is nearly twice as frequent in the stomach that has been operated on than in the absence of operation. Intervals between gastric resection and the development of the stump carcinoma ranged from 10 to 25 years. In the material examined it could be demonstrated that carcinoma of the gastric stump is increasing. This is probably due to the fact that more patients who have undergone gastric resection now reach the cancer age. The type of gastric operation, whether Billroth 1, Billroth 2, or gastroenterostomy, had no influence on the incidence of the development of carcinoma in the gastric stump. As regards localization, it was found that carcinoma at the anastomosis was rare; after Billroth 1 operation it was never observed; after Billroth 2 operation it occurred in 16.1% and after gastroenterostomy in 14.2% of the cases. It was not possible to ascertain whether the localization of the ulcer had any influence on the localization of the carcinoma in the gastric stump. Predisposing factors for the formation of carcinoma in the remaining portion of the stomach are: gastritis, or anastomositis, lesions that transform the cell structure of the gastric mucosa; also changes in the chemistry of the remaining gastric stump, resulting from the removal of the acid-forming areas. Long-standing or relapsing gastric ulcers show a considerable tendency to malignant degeneration in persons after the age of 40. Malignant degeneration represents a considerable danger if an ulcer is left behind in the stomach. The symptomatology of carcinoma in the gastric stump is essentially the same as that of gastric carcinoma in general. The roentgenologic diagnosis of stump carcinoma is diffiult. To facilitate roentgenologic examination it is advisable to make roentgenograms soon after gastric resection so that these may be used later for comparative purposes. The prognosis of carcinoma of the gastric stump is unfavorable. The authors were able to perform resection in four of eight patients with stump carcinoma who were observed at their clinic. Two of these patients are still living; the other two died during the postoperative period. Three of the eight cases proved inoperable, and one patient refused operation. Since recurrent ulcers have a tendency to malignant degeneration it is recommended that resection of four-fifths of the stomach be carried out in order to produce anacidity and thereby avoid ulcer recurrence. The palliative Madlener resection should be avoided as much as possible, because now the isolated resection of the fundus and of the cardia is technically quite feasible. The authors feel that if these recommendations would be followed the frequency of stump carcinoma could be reduced.

A Case of Total Colectomy in Ulcerative Colitis. R. Kühlmayer. Wien. klin. Wchnschr. **66:**545-546 (Aug. 6) 1954 (In German) [Vienna, Austria].

A total colectomy with primary ileoproctostomy was performed in a 23-year-old woman with severe ulcerative colitis of four weeks' duration. The patient had up to 20 bowel movements daily, with foul-smelling feces mixed with blood and pus. The patient's temperature was 102.2 F. Two anal fissures caused

torment at defecation. The patient had lost 44 lb. (20 kg.) since the onset of the disease. Rectoscopy revealed inflammatory changes of the mucous membrane up to 10 cm. but no ulcerations, and this finding was decisive for the selection of total colectomy as the operative method. After mobilization and resection of the entire colon, a side-to-end anastomosis was performed between the inferior portion of the ileum and the rectum 10 cm. above the anus, to grant the patient's request for omiting an artificial anus. The operative specimen showed confluent ulcers in addition to acute inflammatory changes in the entire colon, with an apparently imminent perforation. Microscopic examination confirmed the extensive destruction of the intestinal wall. The postoperative course was surprisingly mild. Temperature was restored to normal immediately after the operation. The number of bowel movements still varied from 15 to 20 shortly after the operation but was reduced considerably six months after the operation. Within 17 months the patient gained 44 lb. (20 kg.); she had four to five bowel movements daily, and the number as well as the consistency of the stools depended on the type of the ingested food. Rectoscopy revealed a normal condition, and the anal fissures were completely healed. On radioscopic examination the contrast medium filled the normal ampulla and then passed through a sufficiently wide anastomosis into the considerably dilated lower small intestine. While healing or improvement may be obtained with conservative treatment in 80 to 90% of patients with ulcerative colitis, surgical treatment is indispensable in the remaining 10 to 20% refractory cases because of a mortality rate of up to 28.5% with conservative treatment as compared to an operative mortality of 4%.

Late Results in Cases of Hirschsprung's Disease Operated on in Childhood: The Author's Position with Regard to Swenson. V. Orator. Wien. Klin. Wchnschr. **66:**543-545 (Aug. 6) 1954 (In German) [Vienna, Austria].

Swenson of Boston and Bodian of London proposed a new etiological concept of congenital megacolon (Hirschsprung's disease), according to which the disease is caused by a functionally deficient segment of the sigmoid or rectosigmoid resulting from a failure of development of Auerbach's plexus in the rectum and sigmoid. They consider removal of the spastic aganglionic segment by rectosigmoidectomy as the only method by which a permanent cure of genuine congenital megacolon can be obtained. There are other cases of so-called idiopathic megacolon, in most of which the dilatation of the intestine begins directly above the anus. It is caused by chronic constipation associated with inspissated fecal masses. In cases of this type favorable results may be obtained frequently by conservative treatment consisting of washing out of the intestine, administration of sympathicolytics, an appropriate diet, and psychic influence. Orator reports two cases of severe congenital megacolon in a 8-year-old boy and in a 6-year-old girl that support the etiological concept of the American and British workers. In the boy a rectosigmoid-invagination resection according to Grekow-Kümmel was performed. Normal regular bowel movements, normal mental development, and normal growth resulted from the operation. Roentgenologic examination of the gastrointestinal tract 23 years after the surgical intervention revealed normal passage of the barium through the stomach and intestine. After eight hours the entire barium meal had passed into the colon. The ascending colon and the transverse colon were filled. There was normally wide, regular haustration. In the case of the girl laparotomy revealed a sigmoid-descending-transverse colon loop larger than the width of a man's arm, while the lower end of the sigmoid and the rectum were not dilated. An invagination resection did not seem to be feasible even after careful dilatation of the sphincter. Resection of the colon was performed in two stages, the transverse colon was sutured to the sigmoid and a colostomy was done. Regular bowel movements resulted from the operation, and on the request of the child's parents the colostomy was closed one year after the operation. Two years later the remaining portions of the colon were again extremely dilated, and severe constipation alternated with diarrhea. Plication according to Niklas, i. e., suture of two taeniae, was done and the patient's condition was improved for several years. Dilatation of the colon, however, recurred, and roentgenologic examination 19 years after the first operation revealed severe hyperinflation of the entire colonic frame up to the cecum. While the spastic aganglionic segment of the rectosigmoid had undoubtedly been removed by the invagination technique used in the case of the boy, it had been left in place in the girl, in whom it made itself manifest again after closure of the colostomy. The plication too was effective temporarily only. The late results in these two cases 20 years after the surgical intervention provided ample confirmation of Swenson and Bodian's concept.

Peripheral Arterial Disease: Some Points of Common Interest to General and Orthopaedic Surgery. F. A. R. Stammers. J. Bone & Joint Surg. **36B:**209-217 (May) 1954 [London, England].

Stammers proposes a simple classification of the common diseases of the peripheral arteries in five groups: (1) spasm alone, occurring mainly in young people, including those with poliomyelitis, acrocyanosis frigida, Raynaud's disease, and an unclassified group of vasospasms; (2) anatomic, occurring usually, but not always, in young people, including those with cervical rib and mechanisms within the costoclavicular space; (3) arterial wall disease with or without superimposed spasm, including thromboangiitis obliterans (Buerger's disease), endarteritis, medial sclerosis, atherosclerosis, and aneurysm; (4) embolism; and (5) trauma, including blunt injuries, open wounds, frostbite, and immersion foot. The symptoms that should arouse suspicion of underlying peripheral arterial disease are considered under the headings of cold sensitivity, trophic changes, and intermittent claudication. In some patients claudication, trophic changes, and coldness all appear at the same time and often proceed to gangrene. History of onset, the age and general condition of the patient, and an examination of the peripheral pulses aid in the diagnosis. If cold feet warm up spontaneously in bed at night it is certain that vasospasm plays a part in the picture. The physiological stimulus to a general vasodilation of the limbs is pyrexia, and a mild, harmless pyrexia can be produced, if the legs are affected, by immersing the hands and forearms up to the elbows in water as hot as can be borne; if the hands are the affected parts, the legs to just below the knees are immersed in the hot water. The full test consists of exposing the affected limbs to room temperature for about one hour, at the same time taking mouth temperature, and then heating the normal limbs, taking temperatures of a digit, the dorsum of foot or hand, and of the calf or forearm, again observing mouth temperature as an indication of a mild pyrexia. The best mimicry of a surgical sympathectomy is to inject a solution of 2% procaine around the appropriate ganglions. The procedure is technically simple, and its effectiveness may be determined by similar temperature studies. The author did not find arteriograms a reliable guide in assessing the patient's chance of a successful below-knee amputation. The only reliable method in the presence of peripheral arterial disease is to make the incisions boldly as for the below-knee amputation and to proceed according to the profusion of bleeding. The object of treatment is to eliminate arteriospasms and thus to open up the collateral circulation. Antispasmodic drugs, such as tolazoline (Priscoline) hydrochloride, and nicotinic acid, the methonium group of drugs, and kallikrein (Padutin) are helpful. Combined treatment with two of these drugs is worth while. Buerger's exercises are beneficial. Reflex heating, carried out by the patient wearing electrically heated gloves extending up to the elbows for many hours each day, proved most useful. Raising the heels of the shoes relieves the demand on the calf muscles and gives relief. Sympathectomy proved more effective for the legs than for the upper limbs. Tenotomy of the tendo calcaneus was performed in three older men, converting a painful hobble into a painless shuffle. Arterial grafting is considered a hopeful form of treatment. Some grafts may thrombose subsequently, but the graft can be repeated, and even a year's respite from pain and threatened loss of limb is worthwhile. Special points are made regarding poliomyelitis, acrocyanosis, tuberculosis indurativa (Bazin's disease), cervical rib, vascular injuries, and crutch arteritis. The long-term results of sympathectomy are reviewed.

Chemotherapy of Tuberculosis of Bones and Joints. M. C. Wilkinson. J. Bone & Joint Surg. **36B:**23-35 (Feb.) 1954 [London, England].

Streptomycin sulfate was given to adults in doses of 1 gm. intramuscularly every day for 90 days. Proportionately smaller doses were given to children. In the early stages of this study intra-articular injections of 200 mg. at weekly or biweekly intervals were also given but were abandoned as the repeated trauma to the joint seemed to cause synovitis to persist. The use of *p*-aminosalicylates in combination with streptomycin was limited to adult patients who had associated pulmonary tuberculosis. A small series of patients was treated with isoniazid. In the first part of this report Wilkinson is concerned with the records of patients who had been discharged from a long-stay open air hospital after treatment for skeletal tuberculosis. Some of these patients had been treated by streptomycin and some had not, but both groups received constitutional treatment. Among patients with tuberculosis of the lumbar spine, in 4 of 10 of those treated with streptomycin bony ankylosis developed compared to 8 of 23 patients who were not treated with streptomycin. Although this may indicate a slight benefit in the streptomycin-treated group, the results in the two groups did not differ greatly. In patients with tuberculosis of the thoracic spine there was no great difference in the results of the two groups, if allowance is made for the exclusion from the streptomycin-treated group of some of the patients with the worst disease who, if they had been included, would probably have increased the number in that group in whom an unsound ankylosis developed. In tuberculosis of the hip and knee only the duration of treatment was compared, because the operative treatment would obscure any late streptomycin effects. The duration of treatment for active tuberculosis of the hip or knee requiring displacement osteotomy or fusion was diminished by the use of streptomycin. The second part of this paper, which is concerned with streptomycin therapy and surgery in the treatment of skeletal tuberculosis, stresses among other factors that ischemic necrosis is part of the pathology of skeletal tuberculosis and that, unless a pathway is opened surgically, antibiotics cannot have access to the lesion. Operation combined with antibiotic therapy seems the surest way of arresting the progress of skeletal tuberculosis. Direct observation of tuberculous tissues treated by streptomycin revealed that in established osseous lesions improvement was not marked. This confirms the results of clinical comparison between patients treated with and without streptomycin for tuberculosis of the spine described in the first part of this paper. The effect of isoniazid on skeletal tuberculosis was similar to that of streptomycin. However, since the molecule of isoniazid is smaller than that of streptomycin, it may be capable of better penetration of inflammatory tissues, and may therefore prove more effective. It does seem probable, however, that isoniazid, like streptomycin, will not cure established lesions without accessory treatment to remove the barriers caused by endarteritis. Streptomycin and isoniazid are powerful drugs when access to infected tissues is free. Before ischemia and necrosis become established they are curative, but after that they are not, unless they are combined with surgery. Attempts to cure the patient by exterminating the tubercle bacilli in his lesion may lead to a precarious recovery. Treatment directed against the bacilli may greatly facilitate a real cure if constitutional treatment is also applied to make the patient immune. Revolutionary though the change may become, it will not be so great as the revolution that occurred 30 years ago, when open air hospitals were first provided for patients with skeletal tuberculosis. A new chapter in the treatment of skeletal tuberculosis has opened, and rapid restoration of function and permanent cure are now possible.

Relationship Between Some Types of Acute Mesenteric Adenitis and Pseudotuberculosis Caused by Pasteurella Pseudotuberculosis (Malassez-Vignal Bacillus). G. Girard. Presse méd. **62:**1176-1177 (Aug. 28) 1954 (In French) [Paris, France].

Among the apparently primary mesenteric adenopathies of childhood and adolescence, which seem to have various causes, there are some that show lesions characteristic of pseudotuberculosis caused by Pasteurella pseudotuberculosis (Malassez-Vignal bacillus). This micro-organism was isolated once in France and three times in Germany from the caseous material of this type of adenitis. A high level of pseudotuberculous agglutinins was demonstrated by Knapp in the serum of 12 patients in whom mesenteric lymph nodes were discovered at laparotomy to contain microabscesses similar to the lesions present in the material from which Past. pseudotuberculosis had been isolated. The symptomatology of this type of human pseudotuberculosis is the same as that of typical mesenteric adenitis, that is, a syndrome suggestive of appendicitis, in which differential diagnosis can be made only at laparotomy. The discovery of adenitis in the process of abscess formation calls for laboratory investigations to determine the causal organism of the pseudotuberculosis. Therapeutically, if appendectomy is performed, with or without removal of the mesenteric lymph nodes, and fever occurs or persists after the intervention, the administration of streptomycin is indicated.

Nine Cases of Calcaneus Homograft for Closed Comminuted Fracture from Mine explosion: P. Nosny. J. chir. **70:**572-589 (Aug.-Sept.) 1954 (In French) [Paris, France].

A method suitable for the treatment of heel fractures caused by land mine explosions was devised. These injuries are far more violent than those ordinarily occurring in civilian life, and they entail extensive damage to the foot, with severe angiopathy. Calcanei were taken from cadavers; each was chosen to fit a particular patient. The homografts were implanted by means of a double arthrodesis: subastragalian and calcaneocuboid. This operation gave excellent results in seven of nine patients wounded in Indo-China whose cases are reported. The cause of the two therapeutic failures was poor healing of the wounded skin with its inadequate blood supply. When this method is successful, good functional recovery is achieved within a few months. The patient starts walking on the day the cast is taken off, that is, 25 to 30 days after operation. It is suggested that calcaneus homografts be tried in civilian practice in cases in which other methods have failed.

Cartilage Heterografts. G. Ginestet. Presse méd. **62:**1191-1192 (Sept. 4) 1954 (In French) [Paris, France].

The author first used a graft of cartilage from a calf in an 8-month-old infant with unilateral temporomaxillary ankylosis. The result was excellent, and many heterografts have been used since, with a reported 90% success. The cartilage is preserved in a solution of penicillin in serum at –15 C. Histological studies indicate that calf cartilage does not produce a foreign body reaction in the human being, since the connective tissue surrounds the graft with no separation and is penetrated by it. In the 10% of cases in which the graft is not accepted, total or partial lysis occurs in a variable period of time; the graft disappears without suppuration and is sometimes replaced by a sort of fibrotic tissue. Cartilage heterografts have the following indications in plastic surgery of the face: (1) insertion after resection for temporomaxillary ankylosis, (2) reconstruction of the ear or nose, (3) filling of depressions in the parotid region, (4) in conjunction with bone grafts in the filling of cranial depressions, and (5) in conjunction with skin grafts when rigidity is needed, as in the nasal pyramid.

NEUROLOGY & PSYCHIATRY

Effect of Ion Exchange Resins in Paroxysmal Disorders of Nervous System. W. O. Klingman. Am. J. Psychiat. **111:**184-195 (Sept.) 1954 [Baltimore].

The introduction of the ion exchange resins in the management of edema provided an opportunity for noting the effects of such resins on the nervous system by disturbing the electrolyte and water balance. Conditions most likely to show such alterations are the paroxysmal disorders, notably epilepsy, and, to a somewhat similar extent, Ménière's disease and migraine. Patients with Ménière's disease frequently have headache, usually on the side of the deafness and similar to migraine. Many persons with migraine are subject to Ménière's disease or they have severe vertigo as part of their migraine attack. Mechanisms responsible for migraine are somewhat similar to those found in Ménière's disease and epilepsy in that they lead to transient

cerebral edema and headache. Patients with epilepsy, Ménière's disease, and with migraine were put on a standard hospital diet (about 100 mEq. of sodium), and during this time the following studies were made: the 24-hour urine was examined for sodium and potassium content; the serum sodium and potassium levels were determined; the carbon dioxide combining power, blood chloride, and urea were examined, and in the patients with epilepsy electroencephalography was done. The diet was then restricted to 1,000 mg. sodium content for a period of 10 days. For the same period a daily dose of 45 gm. of ammonium and potassium form of carboxylic cation exchange resin was given. Daily 24-hour urine examinations for sodium and potassium content were made, and blood serum sodium and potassium determinations were made on the 5th and 10th days. Urea, blood chlorides, and carbon dioxide combining power were likewise checked on the 5th and 10th days, and electroencephalograms were taken on the 5th and 10th days on the patients with epilepsy and on a patient with Ménière's disease. A normal control patient was similarly studied. Experiments with electrolyte distortions by means of ion exchange resin lead the author to believe that this method is effective in reducing neuronal sodium and retention of water, which tends to increase in the brains of persons with epilepsy and in attacks of migraine, whereas in Ménière's disease it tends to relieve and prevent the development of hydrops of the endolymph and perilymph of the labyrinth. It is assumed that this is accomplished by creating a compensated metabolic acidosis, which results in reduction in electrical activity and excitability in the epileptic person, a dehydration and neuronal sodium reduction for the sufferer from severe, repeated, or continuous migraine, and a reduced affinity or sensitivity of the labyrinthine cells to sodium.

Complications of Cerebral Angiography. A. D. Kaplan and A. E. Walker. Neurology **4**:643-656 (Sept.) 1954 [Minneapolis].

Five hundred consecutive cerebral angiograms performed at the Johns Hopkins Hospital on 484 patients were reviewed to determine untoward reactions. The angiography was done in the majority of cases under local infiltration anesthesia with 1% procaine, but in children under 12 years of age and in 15 uncooperative adults general anesthesia was used. Sensitivity to iodopyracet (Diodrast) was checked in all cases by a conjunctival test performed 30 to 45 minutes before the injection. The test was never positive, even in patients who had previously been subjected to angiography with the same contrast medium. Direct percutaneous puncture was made of the carotid in 491 cases and of the vertebral arteries in 8 cases; in a child one year old the carotid artery was exposed in the neck. The total amount of iodopyracet (35%) varied from 30 to 90 cc. in adults and from 10 to 30 cc. in children under 12 years of age. The amount used in single injections varied from 10 to 15 cc. in adults and from 5 to 8 cc. in children. Lateral and anteroposterior stereoscopic views were taken in the majority of cases to show the arterial, capillary, and venous phases of the cerebral circulation. Ordinarily 12 films were exposed. Complications or deaths resulted from angiography in 36 of these 484 patients. Seventeen of the 484 patients died, but the authors believe that only four of these deaths could be ascribed to the angiography. Hemiplegia, paresthesia, or aphasia followed or became temporarily more severe in 10 cases. Convulsions occurred in four, visual disturbances in two, urticaria in two, and clinically significant neck hematoma in two. Although some of these complications are probably due to the inherent toxicity of the drug on vascular tissue, some may be preventable. Occasionally a large hematoma at the site of injection that obstructs respiration will require intubation and surgical evacuation. Ordinarily compression of the site of puncture is sufficient to control bleeding. For the treatment of intracranial complications the authors recommend immediate procaine injection of the cervical sympathetic ganglia. Repeated injections may be required. In some cases this therapy is ineffective. Intravenously administered papaverine may be useful in relieving spasm. To increase intracranial circulation the inhalation of carbon dioxide offers the greatest promise. Other vasodilators such as nicotinic acid and amyl nitrite are not particularly effective. If there is no pulsation in the carotid artery in the neck, exposure of the vessel for removal of a clot may be advisable.

The Association of Undernutrition and Psychosis. J. S. du T. de Wet. South African J. Clin. Sc. **5**:97-107 (June) 1954 (In English) [Cape Town, South Africa].

The degree to which many psychoses are determined by physical factors remains uncertain. Symptoms resembling those of mania or of schizophrenia may be precipitated by organic conditions or by intoxications. During the period Aug. 1, 1952, to Aug. 1, 1953, 142 non-European female patients were admitted to the Tower Hospital, and of these 52 had signs of undernutrition. Wasting, dry skin, and a raised erythrocyte sedimentation rate were the most outstanding clinical signs in the group, whereas purpura was never observed, and polyuria, bradycardia, and phrynoderma were infrequent. The degrees of undernutrition were mild, but the number of patients affected was high (35% of admissions). There was a correlation between undernutrition and the degree to which mental symptoms of organic-reaction type of psychosis were present. The low correlation of a raised erythrocyte sedimentation rate and intensity of mental symptoms of the organic-reaction type of psychosis was unexpected and remains unexplained. It suggests that the erythrocyte sedimentation rate by itself is of no help in the differential diagnosis of organic-reaction psychosis and functional psychosis. The test obviously does not have the diagnostic value in these types of psychosis that, for instance, the Wassermann test has in the diagnosis of general paralysis of the insane, nor has it been shown by this investigation that a raised sedimentation rate in any way conditions the development of the characteristic mental features of the organic-reaction syndrome. Although it is conceivable that in certain organic-reaction psychoses there may be significant correlation between improvement in psychosis and improvement in erythrocyte sedimentation rate, no attempt has been made here to shown this. The incidence of psychosis associated with undernutrition was much greater among urban than rural native women. Most of the women were widowed or separated, and the authors feel that the situation might be alleviated by paying special attention to the diet of unattached middle-aged native females, especially those with children. The prognosis is favorable if the psychosis has not lasted much longer than three months.

Treatment of Depressive Psychosis with Sodium Succinate. S. Gershon and E. M. Trautner. M. J. Australia **2**:291-293 (Aug. 21) 1954 [Sydney, Australia].

The cases presented concerned patients in whom slowly progressing symptoms of depression developed during middle age and later; they had the affective depression of the older age group rather than cyclic depression. They had no history of previous mental illness. The patients were treated with intravenous injections of a 5% sodium succinate solution buffered to a pH of about 7. The injections were given slowly into the antecubital vein in a quantity sufficient to cause cough and flush characteristic of results of administration of the drug, 10 to 50 ml. being required. The injections were given daily (on five days each week), until a total of 20 or 30 had been given. At the same time two to six tablets (0.5 gm.) of sodium succinate were given orally per day, after meals. The oral administration of the medicament was continued after termination of the intravenous therapy. No toxic effects have been observed during the slow injections or with oral maintenance doses over periods of up to two years. All but one of the 22 patients treated with this method had failed to respond to other therapeutic methods. Under treatment with sodium succinate, however, 16 patients improved sufficiently so that they could be discharged and were able to resume their previous occupations. The other six patients, although they showed some improvement, were not discharged, partly because of accompanying arteriosclerotic deterioration and partly because of unfavorable conditions at home. Electroconvulsive treatment presents difficulties if the patients have arteriosclerosis and cardiac damage, since acute circulatory collapse with prolonged invalidism and even death may occur. Several patients who were considered unfit for electroconvulsive treatment because of myocardial damage were treated with succinate given intravenously while their heart action was being observed by means of electrocardiography. From the tracings

taken before, during, and after the succinate injection it was seen that the drug did not essentially alter the tracings; and so the authors did not hesitate to use succinate in the treatment of patients with high blood pressure or other cardiovascular symptoms, and no accidents occurred. The therapeutic effect of succinate was less dramatic than that obtained with electroconvulsive treatment, but it appeared to be more stable. To date, none of the patients treated with succinate has relapsed while continuing the oral administration of the medicament. Succinate never produced the temporary confusion or excessive euphoria observed sometimes after electroshock. The aggressiveness, hostility, or querulousness that in some cases occurred after from 6 to 10 injections of succinate gave way to a more active interest in the surroundings and a more pleasant response after five to seven additional injections. The main effect of succinate is increased awareness. Other types of depression such as manic-depressive psychosis or depressive neurosis do not react to succinate therapy.

Familial Occurrence of Migraine Headache: A Study of Heredity. H. Goodell, R. Lewontin and H. G. Wolff. A. M. A. Arch. Neurol. & Psychiat. **72**:325-334 (Sept.) 1954 [Chicago].

The hypothesis that migraine is not only familial but is also an inherited trait and its mode of inheritance were investigated by statistical analysis of family pedigrees obtained from 119 patients. The group included 65 clinic patients and 54 private patients. Each one of the group of 65 clinic patients was interviewed in person for the purpose of questioning him, or her, about the occurrence of headaches similar to his, or hers, in other members of the family. Information about migraine headaches in the relatives of 54 private patients was obtained by means of a questionnaire and letters. The personal interview with 25 of this group was a means of amplifying and corroborating information given by questionnaire and by letter. In the families of the 119 propositi, there were 343 instances of the migraine phenotype, i. e., persons manifesting migraine headache. Twenty patients had no relatives with migraine, 66 patients had from 1 to 3 relatives with migraine, 22 patients had from 4 to 7 relatives with migraine, and 11 patients had from 8 to 19 relatives with migraine. In the families in which these instances of migraine occurred there was a total of 832 offspring. It is highly probable that migraine is inherited. Furthermore, it is reasonable to assume that migraine is due to a recessive gene the penetrance of which is about 70%. Penetrance indicates the ability of a gene to be sufficiently active in the development of an organism to show its effect in the final phenotype. The figure of 70% penetrance was obtained from the fact that of the 65 offspring of parents both of whom had migraine, only 45, or 69.2%, had headaches.

Psychiatric and Neurological Side-Effects of Isoniazid and Iproniazid. H. Pleasure. A. M. A. Arch. Neurol. & Psychiat. **72**:313-320 (Sept.) 1954 [Chicago].

Observations were made on 602 mentally ill tuberculous patients who had been treated with isoniazid between March, 1952, and March, 1954. The isoniazid was given by mouth at the rate of 4 mg. per kilogram of body weight per day in three divided doses, and the patients also received 1 gm. of streptomycin intramuscularly every third day. The toxicity in comparison with the effectiveness of isoniazid was not considered to be serious. Only five patients who received isoniazid therapy for their tuberculosis required interruption of therapy because of the drug's toxicity, three because of seizures, and two because of peripheral neuropathy. One patient who was moribund with advanced tuberculous meningitis and who was given a larger than normal dose apparently died of convulsions induced by isoniazid. Isoniazid has an aggravating effect on convulsive tendencies even in therapeutic dosage, especially in patients with brain damage. That this effect is not so great as to contraindicate treatment of such patients was shown by administration of the drug to 25 patients who had had lobotomies. Antiepileptic drugs, especially phenobarbital, can usually, but not always, be depended on as antidotes. They were effective in 18 of 19 patients with epilepsy who were given isoniazid therapy. Isoniazid even in normal dosage sometimes causes agitation, which usually can be managed by sedatives without discontinuation of therapy with the drug. However, in excessive dosage it is capable of causing psychoses, as the toxic effect is proportional to the plasma level; 16 patients with psychosis caused by isoniazid have been received at the Edgewood Division of Pilgrim State Hospital. In addition, iproniazid, which is far more toxic and which is used by few physicians, has caused the transfer to this hospital of nine psychotic patients. Twenty-five is a small number when compared with the many thousands of patients who have been treated with these drugs. In excessive dosage isoniazid frequently causes peripheral neuropathy, but when normal therapeutic doses are used this effect is mild and does not contraindicate treatment in the presence of alcoholic neuropathy. Isoniazid does not appear to be dangerous to the aged, to arteriosclerotic patients, or to alcoholics. There is considerable variation in reactions to the drug, and some symptoms may appear early and disappear while administration of the drug is continued, while others may appear only after prolonged administration. Hence large single doses do not give a reliable test of the long-term toxicity.

Schizophrenic-like Psychotic Reactions with Administration of Isoniazid. W. S. Wiedorn and F. Ervin. A. M. A. Arch. Neurol. & Psychiat. **72**:321-324 (Sept.) 1954 [Chicago].

Wiedorn and Ervin report on five patients in whom toxic psychosis developed while under treatment with isoniazid or iproniazid in combination with other antituberculous drugs. The dosage levels of streptomycin, *p*-aminosalicylic acid, isoniazid, and iproniazid in all patients were within the usual therapeutic range. Tuberculous meningitis was excluded as a factor in the psychotic picture. About one month before the acute psychosis each patient experienced insomnia, restlessness, and irritability. Later the patients noted a heightened awareness to environmental stimuli, particularly to light and sound. Gross muscle jerking resembling fasciculation was frequently noted in the hands, arms, face, and about the eyes. Thoughts and verbal productions were rapid and dissociated, paralleling the motor behavior. Various degrees of disorientation were seen during and after the acute episode. None of the patients could later recall details of the psychotic period. Projective-referential and illusory-hallucinatory experiences were loosely organized and seemed to be a response to the heightened environmental awareness and to peripheral sensory disturbances. The first patient specifically blamed isoniazid for her predicament and wanted to "escape from it." Auditory hallucinations were present in all patients, while only the second patient experienced visual hallucinations. The full-blown psychotic picture incorporated not only the patient's previous personality pattern but also the more recent altered perceptions. After therapy with the drugs was stopped the patient first and most consistently showed improvement in psychomotor agitation and the sensory complaints. Later, disorientation and confusion improved, and specific delusions and hallucinations diminished. Only much later, if at all, did anxiety and subtler affective changes improve. The authors say that three similar cases have been reported before, and following the compilation of these five cases, the authors identified two more cases in which acute toxic psychotic reactions occurred in patients receiving streptomycin, *p*-aminosalicylic acid, and isoniazid. In both cases there was a rapid remission of the psychotic signs after withdrawal of the isoniazid and continuation of therapy with streptomycin and *p*-aminosalicylic acid.

Coma and Allied Disturbances of Consciousness in Hypopituitarism. J. E. Caughey and O. Garrod. Brit. M. J. **2**:554-560 (Sept. 4) 1954 [London, England].

Disturbances of consciousness varying from hypersomnia, mild confusion, and impaired cerebration to stupor and profound coma were encountered in 17 patients with hypopituitarism, 10 of whom had previously been reported by Caughey. The factors that precipitate coma are surgical operations on the pituitary gland, pituitary apoplexy (hemorrhage into a pituitary adenoma), infections, hypoglycemia, hypersensitivity to drugs

and anesthetics, sodium depletion, water retention, cerebral anoxia, and hypothermia. Except in some postoperative cases, severe endocrine failure, especially of the adrenal cortex, seemed to be an essential factor in lowering the threshold of consciousness. Cortisone was more effective than thyroxine or testosterone in the prevention and correction of coma. In obscure cases of coma the possibility of hypopituitarism should always be considered. The diagnosis can usually be made on clinical signs of hypogonadism, since, in this disease, gonadal function is the first to fail, followed usually by adrenal and, finally, by thyroid failure. In the comatose patient a combination of hypotension, azotemia, and hemoconcentration suggests loss of sodium from adrenal failure, in which case the depletion may be masked by hemoconcentration, although urinary sodium excretion should be higher than in shock arising from other causes. In a confused or drowsy patient an extremely low plasma sodium level with normal blood urea and a normal or slightly lowered blood pressure suggests water intoxication. In view of the greatly increased sensitivity to insulin of patients with hypopituitarism and the difficulty there may be in correcting their hypoglycemic coma even when the blood sugar has been restored, the insulin tolerance test is an unjustifiable risk when the diagnosis can be made by other means. The authors give the following recommendations in regard to treatment of hypopituitary coma: As soon as a certain coma is found to be associated with hypopituitarism, and especially when there is fever, search should be made for signs of a precipitating infection such as influenza, pneumonia, pyelitis, or gastroenteritis, and appropriate antibiotic therapy should be started at once. If the body temperature is particularly low the patient should be immersed in a warm bath. The rectal temperature, pulse rate, and blood pressure should be checked at short intervals. Blood should be taken early for determination of levels of blood sugar, plasma sodium, urea, bicarbonate, and hematocrit or plasma specific gravity. Without waiting for the results, on the supposition that hypoglycemia may be present, glucose should be given orally, if possible, or intravenously (50 ml. of 50% glucose followed by a steady infusion of 5% glucose). An infusion of 50 to 100 mg. of hydrocortisone alcohol dissolved in 250 to 500 ml. of isotonic sodium chloride solution should be given as soon as possible. If hydrocortisone is not available, 50 to 100 mg. of microcrystalline cortisone acetate (Cortone) can be given intravenously. Thereafter, 50 mg. of cortisone acetate should be given every six hours by nasal tube, which should be kept in situ for feeding purposes, until consciousness has been regained.

GYNECOLOGY & OBSTETRICS

The Management of Carcinoma of the Corpus. J. A. Corscaden and H. M. M. Tovell. Am. J. Obst. & Gynec. **68:**737-760 (Sept.) 1954 [St. Louis].

Of 246 women with cancer of the body of the uterus treated at the Sloane Hospital for Women in New York between 1938 and 1948, 57 received intracavitary radium therapy with or without subsequent x-ray irradiation. Sixty-two were subjected to some type of surgical treatment with and without x-ray irradiation, and 127 were treated by preoperative radium followed six to eight weeks later by hysterectomy. Of the 57 patients, 39 were followed up, and 13 (33.3%) of these obtained a five-year cure by radium; 4 of these 13 patients had recurrences later, one of them after 10 years. Fifty-one of the 62 patients undergoing surgical treatment were followed up, and 34 (66.6%) of these were cured for five years; 105 of the 127 patients with preoperative radium treatment and hysterectomy were followed, and 87 (82.8%) of these were cured for five years. By breaking down these crude salvage data according to the extent of the disease, it appeared that only 5 to 10% of the cases of cancer of the body of the uterus are highly fatal, metastasizing probably before the disease is clinically manifest. Cancer of the body of the uterus in most cases remains localized in the uterus for a long time and is cured by either surgical intervention alone or intracavitary radium therapy followed by surgical intervention. Early diagnosis is therefore desirable. In cancers of large size involving the whole endometrium and enlarging the size of the uterus, preoperative radium therapy apparently gives five-year results superior to those after surgical intervention alone. A surprisingly high percentage of five-year cures followed treatment of microscopic metastatic lesions in the adnexa (18 in 25, i. e., 76%). No patient in whom the disease had spread beyond the adnexa was cured. The more anaplastic tumors are the more actively growing tumors and have a higher mortality than the more differential tumors. The more anaplastic tumors penetrate deeper into the myometrium and metastasize more frequently to the adnexa. The deeper the tumor invades the myometrium the higher is the mortality. The mortality rate is higher among patients who do not show any response to irradiation than among those who do reveal an irradiation response.

Preinvasive Carcinoma of the Cervix: Correlation of Findings in Biopsy and Hysterectomy Specimens. T. W. Huey Jr., H. L. Large Jr., and P. Kimmelstiel. Am. J. Obst. & Gynec. **68:**761-768 (Sept.) 1954 [St. Louis].

Seventy-one women between the ages of 20 and 61 years with preinvasive carcinoma of the cervix uteri (carcinoma in situ or intraepithelial carcinoma) were studied to correlate the findings in different types of cervical biopsies with those of subsequent hysterectomies. Twenty-five of these women had residual carcinoma in the uterus subsequent to biopsy. Thirty-eight patients had small or superficial biopsies, and 33 had large, thick-cone biopsies. Residual carcinoma was found in the hysterectomy specimens of 16 of the 38 patients as compared to 9 of the 33 patients. At least minimal but definite involvement of glands was found in 65 of the 71 patients. The extent of glandular involvement could be fairly well estimated in thick-cone biopsies, while in small biopsies the hysterectomy specimen had to be correlated in order to accomplish such estimate. The thick-cone biopsy, therefore, is the method of choice in every patient with a positive vaginal smear or clinical suspicion of cancer. Small or superficial biopsies have no place in the recognition or treatment of suspected early cancer of the cervix. The thick-cone biopsy permits reasonably accurate mapping of the lesion and may, consequently, determine the type of definitive treatment. In selective cases, the thick-cone biopsy may by itself constitute definitive treatment but should then be followed by periodic vaginal smears.

PEDIATRICS

Late Observations on Infants with Congenital Syphilis Treated Exclusively with Penicillin. S. E. Bos, J. I. de Bruijne and W. M. van Wermeskerken. Nederl. tijdschr. geneesk. **98:**2060-2064 (July 24) 1954 (In Dutch) [Amsterdam, Netherlands].

Bos and his associates present observations on 26 infants and on one 18-month-old child who were treated for congenital syphilis exclusively with penicillin. The total dose of from 150,000 to 200,000 units per kilogram of body weight was usually administered over a period of two weeks. On the first day six doses of 2,500 units, on the second day six doses of 5,000 units, and on the third day six doses of 7,500 units were given, and during the subsequent 11 days the six daily doses were apportioned in such a way that the total of 150,000 or 200,000 units per kilogram of body weight was given. Small initial doses were given, because the first infant, in whom large initial doses were given, died. In all, five of the infants died; two during the beginning of the course, one of gastroenteritis shortly after the treatment, and two children later of unexplained causes, but there was no indication that congenital syphilis was the cause. All the other children were cured, and in these the serologic tests became negative after from one to 18 months. All children have been followed for from one to seven years; the average period of follow-up was five years. No clinical or serologic relapses occurred. The 20 children who were studied by a psychiatrist showed no signs of beginning mental defects or of distintegration of personality as a result of the syphilitic infection. The authors feel that these favorable results justify continuation of the present treatment of congenital syphilis by one course of penicillin. The final evaluation of this treatment requires further observation.

Prolonged Obstructive Jaundice in Infancy: IV. Neonatal Hepatitis. S. S. Gellis, J. M. Craig and D. Y.-Y. Hsia. A. M. A. Am. J. Dis. Child. **88**:285-293 (Sept.) 1954 [Chicago].

The pathogenesis of the syndrome of inspissated bile of unknown etiology in infants is as yet poorly understood. Small bile ducts, hepatic immaturity, and dehydration appear to play a part in causing biliary stasis and inspissation. Early congenital cirrhosis of the liver with jaundice, cholangitis, and hepatitis cannot with certainty be ruled out. Recent work strongly suggests that some form of hepatitis, probably viral, is responsible for this syndrome. The proper name for the condition would seem to be neonatal hepatitis. Forty-one of 42 infants with the syndrome were followed up, and it was found that 29 (71%) were living and well, 4 (10%) were living but still jaundiced with evidence of cirrhosis and portal hypertension, and 8 (19%) were dead. The pathology material in all cases was reevaluated, and all liver sections were found to be characteristic of viral hepatitis as described by Craig and Landing. Family histories were elicited; of 41 mothers, only one had a history of hepatitis and only one sibling out of 33 had a definite history of jaundice, though three more cases of sibling occurrence are reported in an appendix to the present work. Although the available evidence does not definitely exclude other viruses being responsible, it would seem that the virus of homologous serum hepatitis is the most likely cause of neonatal hepatitis. The virus of infectious hepatitis appears not to be implicated. It is assumed that the causal organism is transmitted across the placental barrier by mothers who are silent carriers of it.

ABO Heterospecific Pregnancy and Hemolytic Disease: A Study of Normal and Pathologic Variants. III. Hematologic Findings and Erythrocyte Survival in Normal Infants. W. W. Zuelzer and E. Kaplan. A. M. A. Am. J. Dis. Child. **88**:307 318 (Sept.) 1954 [Chicago].

Infants born as the result of ABO homospecific and heterospecific pregnancies were compared with respect to the occurrence of early icterus, bilirubin levels of cord blood and serum on the third day of life, hemoglobin levels, spherocytosis, incidence of splenomegaly, and general clinical behavior. No appreciable differences were apparent between the two groups, except for a slightly higher average of the bilirubin levels of questionable significance in the O-A and O-B heterospecific group. The incidence of icterus precox in a random series of 131 infants of heterospecific pregnancies was zero. It was concluded that heterospecific pregnancy per se does not constitute a physiological handicap to the infant if the usual clinical, hematological, and biochemical standards are applied. When heterospecific pregnancy is associated with symptoms in the infant that can be attributed to the effects of maternal alpha or beta antibodies, the event is always pathological, regardless of the seriousness of its outcome. With a physiological measurement of the survival of simultaneously transfused O and A or B cells, however, selectively increased destruction of those erythrocytes that are agglutinable by the maternal alpha or beta antibodies can be demonstrated in seemingly normal heterospecific infants whose mothers had no unusual serologic patterns at the time of delivery. This phenomenon was encountered only in secretor infants. The observed facts suggest that maternal isoantibodies may produce effects on the fetal red blood cells without clinically or serologically recognizable disturbances in the physiology of the newborn infant.

ABO Heterospecific Pregnancy and Hemolytic Disease: A Study of Normal and Pathologic Variants. IV. Pathologic Variants. W. W. Zuelzer and E. Kaplan. A. M. A. Am. J. Dis. Child. **88**:319-338 (Sept.) 1954 [Chicago].

A comparison of 74 cases of suspected ABO hemolytic disease, designated as the pediatric group, and 228 cases of unselected heterospecific and homospecific pregnancies, labeled the obstetric group, showed clear-cut differences. While ABO heterospecific pregnancy ordinarily has no harmful effect on the fetus or newborn infant, it does have such an effect in certain instances clearly related to the presence of unusual maternal antibodies with special immune characteristics. These characteristics permit a serologic diagnosis in the majority of cases and are described in detail. The presence of free antibody antagonistic to the infant's blood group in the serum of the newborn correlates with the maternal pattern and is of diagnostic significance. The condition resulting from the special immunity of the mother against A or B is a hemolytic process of moderate and mild degree accompanied by variable degrees of icterus. The icterus appears to be determined in part by an independent factor, presumably hepatic function. There is no sharp dividing line between so-called icterus precox and ABO hemolytic disease. The only serious threat is the occurrence of kernicterus observed in about 15% of cases and apparently related to bilirubinemia and to a factor of individual susceptibility. In O-A hemolytic disease the maternal antibody reaching the fetus was always of A_1 specificity, and all of the affected infants belonged to subgroup A_1, though this point could not always be established at birth. It seems likely that A_2 infants are not susceptible to ABO hemolytic disease. The secretor status of the A or B infants did not seem to influence the effects of the special immune antibodies of the mother.

The Characteristics of the Toxic Serum Factor in Rheumatic Fever. F. Küster. Klin. Wchnschr. **32**:739-740 (Aug.) 1954 (In German) [Berlin, Germany].

Two years ago Küster reported on the discovery in fresh serum of patients with rheumatic fever of a necrotic factor, which can be demonstrated by injection into the skin of guinea pigs or rabbits. The course of the cutaneous reaction as well as the histological picture of the lesion resembles the Arthus phenomenon. This serum effect is not specific for rheumatic fever, but in no other disease can it be produced with such regularity and intensity. The reaction elicitable with rheumatic fever serum resembles most closely that of scarlet fever serum, which seems important in view of the fact that alpha streptococci are involved in both of these diseases. The cutaneous reaction can be produced in animals by means of the serum as well as the plasma. Heating of the serum to 56 C for 30 minutes largely abolishes the toxic effect of the serum. If the serum is kept at room temperature, the toxic effect decreases noticeably within a few hours; if kept in the refrigerator it can be preserved for from three to five days. Immediate freezing of the serum at −28 C preserves the toxic effect for from 8 to 14 days. Conservation did not prove possible by drying in the exsiccator over phosphorus pentoxide at a temperature of 4 C, but it is possible that drying in high vacuum might be more effective. Filtration proved that the toxic effect was due to serum constituents of high molecular weight. The toxic effect of the serum obtained from the patient in the acute stage of the disease was not abolished by convalescent serum. The strong necrotic effect at the site of injection of the serum of the rheumatic patients suggests a relationship to a necrotic substance described by Menkin, which likewise was of high molecular weight and thermolabile. The origin and mode development of the substance has not as yet been explained, but Küster points out that rheumatic fever practically always follows an acute infection with alpha streptococci. This infection is followed by intensive formation of antibodies. It is not definitely known what relationship exists between this process and the appearance of the toxic substance of high molecular weight in the plasma after the outbreak of rheumatic fever; however, a bridge seems to be suggested by observations reported by earlier immunologists. Reports by Friedberger and Pfeiffer contain information about a substance designated as "anaphylatoxin." There is a considerable parallelism between anaphylatoxin and the substance under consideration in this paper. Reports by Friedberger state that anaphylatoxin is of high molecular weight and unstable in regard to temperature. Furthermore, if injected intravenously it produces death in shock, and if injected intracutaneously the reaction resembles the Arthus phenomenon. Both substances have the same effect on the isolated frog heart.

Congenital Hereditary Hematuria. G. C. Reyersbach and A. M. Butler. New England J. Med. **251**:377-380 (Sept. 2) 1954 [Boston].

The literature on a congenital hereditary syndrome characterized primarily by hematuria and often accompanied by nerve deafness is reviewed. The occurrence of eight further cases in four unrelated families is reported. Seven of these patients had albuminuria, hematuria, and some cylindruria at all times, though the hematuria varied from a few red cells in the centrifuged urinary sediment to bright red urine. The eighth patient had intermittent albuminuria, hematuria, and cylindruria; hematuria was never pronounced. The ages at which the syndrome was discovered ranged from 6 months to 7 years. Four patients were male and four female. Follow-up ranged from 2 to 19 years; only one patient, a boy, was found to have permanently impaired kidney function. The literature indicates that chronic nephritis can develop in these patients, sometimes leading to death in uremia. Nerve deafness was present in three boys. In the two families in which genetic data were available, transmission was by females. As in previous reports, males were affected more severely than females. In one of the families, all but one of the affected men died in the teens or 20's. There is no specific therapy known to modify the hematuria or the course of the disease. It is emphasized that congenital hereditary hematuria ought to be differentiated from glomerulonephritis because of its different cause, course, and prognosis.

Blood Transfusion in Prophylaxis of Anemia of Premature Infants. C. Pototschnig and A. Verga. Minerva pediat. **6**:537-540 (July 31) 1954 (In Italian) [Turin, Italy].

The repeated and systematic transfusion of fresh blood to premature infants after the second week of life proved beneficial in treating the anemia that is a constant and severe complication in such infants. The authors report their results with this therapy in 99 premature infants whose weight at birth ranged from 1,000 to 2,300 gm. The treatment consisted of injecting 10 to 12 cc. of fresh blood into the vein of the arm or into the internal saphenous vein once a week until the infants were discharged. Blood studies were made periodically. The elevated number of erythrocytes gradually decreased during the first three months, sometimes to below 3,000,000. After this period they stabilized to between 3,500,000 and 5,000,000, with a slight tendency to increase again toward the end of the first year of life. The elevated hemoglobin level decreased abruptly to average values of 70% at the end of the third month. From the third to the sixth months it rose again slightly, and the authors attribute this increase to a reutilization of the hemoglobin liberated by the transfused erythrocytes. After the sixth month there was a gradual decrease, which became more accentuated at the end of the first year of life. Early systematic transfusion of fresh blood to premature infants thus seems to influence the number of erythrocytes more than the quantity of hemoglobin. In fact, a hypochromic anemia was present in the infants at the end of the first year of life. Despite this, early transfusion of fresh blood is the treatment of choice for anemia of premature infants. It also benefits their growth and general condition.

Teratoma of Anterior Mediastinum in Infant Two Months Old. C. Sariñana, A. Torres de Anda, M. Figueroa and M. Salas M. Bol. méd. Hosp. Inf. **11**:279-286 (June 1) 1954 (In Spanish) [Mexico, D. F., Mexico].

Teratoma of the anterior mediastinum is rare in children and infants. In the Hospital Infantil of Mexico City three cases were observed during the past 11 years. Two of the patients were children 12 years old. The subject of this report is a girl 2 months old. At the age of 5 weeks she began to suffer with crises of acute respiratory obstruction with dyspnea, cyanosis, and syncope. A tumor of the anterior aspect of the chest was found by clinical examination and confirmed by roentgen examination of the chest. Diagnosis of teratoma was confirmed by histological examination of material obtained from the tumor by puncture. Evacuation of 90 cc. of tumoral fluid by puncture controlled the respiratory symptoms. The operation consisted of surgical removal of the tumor by means of a right lateroanterior thoracotomy. The operation was well tolerated. The histological study of the removed tumor showed benign cystic adult teratoma.

DERMATOLOGY

The Vascular Response of the Skin to Ultra-Violet Light. M. W. Partington. Clin. Sc. **13**:425-439 (Aug.) 1954 [London, England].

Irradiation of the skin with ultraviolet light produces, after a latent period, a characteristic long-lasting vasodilatation confined to the area of skin irradiated. Because of the slight penetration into the skin of the wave lengths responsible for this reaction, and because of the phenomenon of the "diffusion flush," it is now generally agreed that this erythema results from the formation or release of a vasodilator substance in the skin. Lewis tried to bring this vascular reaction within the scope of the triple response of the skin to injury and suggested that the vasodilator substance was histamine or H-substance. Other workers expressed dissatisfaction with this hypothesis. The studies described were made to test the histamine hypothesis. It was found that flares produced by pricking histamine into skin reddened by ultraviolet light were no different in size from flares produced in the same way on unirradiated skin. Lowering the histamine content of skin by the injection of histamine liberators either before or just after irradiation did not alter the subsequent development of erythema. No evidence was found from the use of histamine liberators that skin irradiated with ultraviolet light 24 hours before had a lowered histamine content. Pretreatment with antihistamines reduced the red reaction of the skin to histamine but not that produced by ultraviolet light. No red reaction was produced in rabbit's skin by histamine or the histamine liberators, but a red reaction similar to that seen in human skin followed irradiation with ultraviolet light. In a rabbit with trypan blue in its circulation, irradiation of the skin causes dye-staining of the area irradiated, which is not prevented by the antihistamines. It is concluded that the vascular response of the skin to ultraviolet light is not due to the release of histamine.

Late Results of Sulphone Treatment of Leprosy in East Nigeria. J. Lowe. Leprosy Rev. **25**:113-124 (July) 1954 [London, England].

Lowe reviews the late results obtained with sulfones in the treatment of leprosy among the Ibo people of Eastern Nigeria, who know and fear leprosy. They usually recognize the disease in its early stages; and their village and clan organizations aid in detection and treatment. The patients usually persist in the treatment until they can receive a medical certificate that the disease is arrested, although in some cases this takes several years. Sulfone therapy was started in Nigeria in 1946, and after the temporary use of two other sulfones, treatment with diaminodiphenyl-sulfone became established. Attempts were made to find answers to two questions: 1. What is the present condition of the patients who were being treated several years ago, and in how many has the disease been arrested? 2. How many have later shown relapse? Sulfone compounds are sure but sometimes slow in their action. There have been no signs indicating serious drug resistance. A study of the relapse rate after the cessation of sulfone treatment at the Research Unit revealed that of 252 patients discharged with instructions to return for reexamination, 23 are not yet due to return, but of the remaining 229, 208 (92%) have returned at least once and some up to 9 times in periods up to five years. Of 148 discharged patients who had lepromatous leprosy, 139 were reexamined, and 15 of these showed slight evidence of reactivation of the disease. No serious case of relapse was seen. Of 81 discharged patients with tuberculoid leprosy, 8 of 69 who returned for examination showed signs of reactivation of the disease in the "tuberculoid" form. The lepromatous form developed in none, and no positive "smears" were found. In patients with tuberculoid and lepromatous leprosy reactivation occurred early, usually within one, and almost always within two years of the cessation of treatment; no relapse was seen. The patient who relapsed with clinical manifestations rapidly responded to treatment; and, in the rest the smears again became negative. Thus the relapses have been few, mild, and readily controlled.

OPHTHALMOLOGY

Retrolental Fibroplasia. A. C. Esposito. West Virginia M. J. **50**:260-265 (Sept.) 1954 [Charleston, W. Va.].

Retrolental fibroplasia is a disease of prematurity, being more prevalent among those infants weighing 3 lb. (1.36 kg.) or less and increasingly prevalent with decreased birth weight. It is not present at birth. No associated congenital or mental abnormality is present. A vitreous haze is an early sign, but a clear vitreous may or may not go on to retrolental fibroplasia. The disease can regress although no specific therapy is given. The first pathological process occurs in the nerve fiber layer of the retina near the equator of the eyeball, with no inflammatory lesions present and, finally, with involvement of the vitreous to detach the retina and produce a complete retrolental membrane in 20 to 22% of the infants in whom this disease develops. The active or acute phase occurs from the first to the third month of postnatal life, and if the disease has not developed by the third month, it usually does not appear thereafter. Twelve case reports are presented. Vitamin E was given to one patient and corticotropin to another, with no success. The pathological findings in two enucleated eyes are given. All the birth weights in this series were below the 5 lb. 8 oz. (3.9 kg.) limit of prematurity, with six weights below 3 lb. (1.36 kg.). The disturbing differential diagnosis in this series was retinoblastoma in two cases in which calcium formation initiated a confusion that could only be settled by histological studies. In cases complicated by secondary glaucoma, the patient usually derives benefit from miotics, but in one such case in the present series this was not so. There appears to be good evidence that oxygen therapy of the newborn infant is involved in the cause of retrolental fibroplasia.

The Association of Retrolental Fibroplasia with Cerebral Diplegia. T. T. S. Ingram and J. D. Kerr. Arch. Dis. Childhood **29**:282-289 (Aug.) 1954 [London, England].

In the course of two investigations, the first a survey of the occurrence of retrolental fibroplasia in Edinburgh during the five years 1948 to 1952 and the second a survey of the cause and incidence of cerebral palsy in the same city, the two conditions were found in association in six instances. The association was more frequent than would be expected by chance, and there were probably causal factors other than prematurity common to both retrolental fibroplasia and cerebral diplegia. Maternal ages were not dissimilar in the groups of prematurely born abnormal patients, but there was a larger proportion of mothers over the age of 35 years in the cases of full-term diplegic patients. In this latter group, two mothers had failing periods for some months before the conception of the affected child. Two mothers, one in the full-term diplegic group and the other in the group of prematurely born diplegic infants, had ovariectomies performed before conception occurred. In the cases with retrolental fibroplasia associated with diplegia no normal pregnancies occurred. The commonest single abnormality was antepartum hemorrhage. All of the infants with cerebral diplegia and retrolental fibroplasia required oxygen for prolonged periods, as did those with retrolental fibroplasia alone. In a large proportion of the group with retrolental fibroplasia and in three of those showing both disorders lung expansion was poor for at least one week after delivery. The fact that in some of the cases pregnancy, delivery, and the state of the child at birth were abnormal and an unsatisfactory neonatal period frequently ensued makes it difficult to assess the importance of any one causal factor. Since 33 cases of diplegia were discovered in a population of 35,866 children, it is likely that the incidence of diplegia is about 1 per 1,000 surviving children of all birth weights. About 40% of the diplegic children are born prematurely. The incidence of both retrolental fibroplasia and cerebral diplegia increases as birth weight decreases. Prolonged oxygen therapy had been given in each of the six cases under review, but, whereas there is clinical and experimental evidence that oxygen therapy may be closely related to the incidence of retrolental fibroplasia, the same does not apply to cerebral diplegia. It is suggested that anoxia in the prenatal, natal, and postnatal periods, resulting from the abnormalities described, is important in determining the association of retrolental fibroplasia and cerebral diplegia in a proportion of prematurely born infants.

THERAPEUTICS

The Influence of Antibiotics on Experimental Endogenous Peritonitis. E. J. Pulaski, H. E. Noyes, J. R. Evans, and R. A. Brame. Surg., Gynec. & Obst. **99**:341-358 (Sept.) 1954 [Chicago].

The first objective of the studies reported by Pulaski and associates was to evolve a technique for the uniform production of lethal, diffuse, acute peritonitis in laboratory animals. The second consideration was to ascertain the role played by certain antibiotics in influencing the host's responses to this disease. A standardized acute diffuse peritonitis was produced in rats and dogs by perforation of the cecum followed by intraperitoneal injection of a suspension of hog mucin. The mortality rate from this form of peritonitis was 86% in rats and 80% in dogs. The different antibiotics were administered by various routes in a single dose of 40 mg. per kilogram of body weight. Antibiotics were given to 1,714 rats, and 664 untreated rats served as controls. Studies were made also on 86 dogs, of which 20 served as controls. In rats, chlortetracycline was the only antibiotic that was more effective when given orally than by parenteral administration. When the antibiotics were given to rats intravenously, chlortetracycline and oxytetracycline gave the highest survival rates, followed in the order of efficacy by streptomycin, chloramphenicol, a combination of penicillin and streptomycin, and penicillin alone. Intraperitoneal therapy was less effective than intravenous therapy, except in the case of penicillin. Combined parenteral and intraperitoneal therapy was more effective than parenteral therapy alone in the case of penicillin alone or combined with streptomycin. In the case of chlortetracycline this form of application was inferior to parenteral therapy, and it was no better than parenteral therapy alone in the case of oxytetracycline, chloramphenicol, or streptomycin. Successful antibiotic therapy was always associated with a suppression of the total bacterial count, but the peritoneal cavity continued to harbor micro-organisms for days after apparent recovery from the disease. The authors assume that differences in therapeutic responses to various antibiotics in dogs and rats are probably related to the dissimilarities of the bacterial flora of peritonitis in the two animal species. Drug toxicity may be responsible for the differences in the survival rates with the two biologically similar compounds oxytetracycline and tetracycline. The action mechanism of the antibiotics in peritonitis seems to consist of the suppression of the bacteria in the peritoneal exudate to such a degree that the defense mechanisms of the body can cope with the surviving bacteria. This suppression must be effected, however, before the toxic substances elaborated by the micro-organisms produce lethal intoxication.

Combined Treatment of Osteosarcomata with Roentgen Rays and Raw Egg Yolk: Preliminary Report on Results Obtained in Children and Adults. C. Krebs. Danish M. Bull. **1**:95-105 (Aug.) 1954 (In English) [Copenhagen, Denmark].

The 31 patients with osteosarcoma given roentgen treatment at the Radium Center for Jutland from 1937 to 1950 survived only an average of 250 days from the time of admission. Therapy with roentgen rays supplemented with raw egg yolk was then introduced. The principle of the treatment is based on the observation that the growth of osteosarcoma is nearly always arrested at the epiphyseal line. In epiphyseal lines there are either embryonal or undifferentiated cells that are capable of preventing the infiltration of foreign tissue, possibly because of their content of growth-stimulating hormones. The egg yolk is believed to contain the requisite growth hormones. Ten patients under 18 years of age and 16 over 18 years of age were treated. During the hospital stay six to eight raw egg yolks were administered daily; after discharge two raw egg yolks were given daily for a variable time. Only freshly laid eggs were used, from hens given specially prepared food including crushed common mussels, as mussels are thought to contain substances likely to induce increased deposit of calcium. Healing to an extent never before seen by the author resulted. Half the patients given the combined roentgen and raw egg yolk treatment are still living. The effect was more conspicuous in children than in adults. Whether the method can cure is still unknown. It is stressed that this is a preliminary report.

BOOK REVIEWS

The Deaf and Their Problems: A Study in Special Education. By Kenneth W. Hodgson, M.A. With preface by Sir Richard Paget, Bart. Cloth, $6. Pp. 364. Philosophical Library, Inc., 15 E. 40th St. New York 16, 1953.

This easily read account is the result of much searching of source material and interrogation of those who are experts in otology and the education of the deaf. Since it is written by a layman, it is down to earth and understandable. Even the anatomy is presented so simply and practically that it can readily be comprehended by a beginner; however, because some of the information has come to the author through clinicians a few slightly confused statements have resulted. Mr. Hodgson has apparently acquired an extraordinary understanding and a constructive sympathy for persons born deaf. He has made a thorough search of the literature pertaining to the congenitally deaf and added this knowledge to a broad background of classical literature. The book can best be described as a history of the social and educational problems of the deaf. It seems to have been written to emphasize the need for adapting the educational program of a deaf child to his personal requirements rather than to fit all deaf children into a program of oralism or manualism. Hodgson feels that the deaf should know both systems of communication, if possible, and know them well. He insists on a grammatically accurate manual system that promotes mental development and rationalization. In other words, he believes that oralism versus manualism hinders the education of the deaf. This is an age-old controversy, and the author apparently leans toward the manual technique. Part 1 deals with the economics of deaf education, the ear and hearing, how the ear works, disorders of ears, and methods of assessing the amount of hearing remaining. Part 2 covers a history of deaf education, and part 3 gives an evaluation of the present status of the deaf. The format and organization of the book are logical. A number of charts clarify the discussion, but no anatomic illustrations are included.

Intoxications et maladies professionnelles. Par Léon Dérobert, professeur agrégé à la Faculté de médecine de Paris. Avec la collaboration de A. Hadengue, professeur agrégé à la Faculté de médecine de Paris, et al. Collection médico-chirurgicale à révision annuelle. Directeur général: Pasteur Vallery-Radot. Sécretaire général: Jean Hamburger. Cloth, looseleaf. 8800 francs. Pp. 1515; xxxi, with 76 illustrations. Ernest Flammarion, 22 rue de Vaugirard, Paris 6e, France, 1954.

Appraised by American standards, this book (in French) is to be rated as an elaborate manual with extensive coverage for selected items, most of which are already well explored in the United States. Items on which there is a dearth of information in the United States are often unmentioned or mentioned only in listings in this book. Much of the book is devoted to tabulations and listings. Because numerous sections devoted to legislation and legal restriction apply only to France, the value of the book in this country is limited. Occasionally statements are made at wide variance to those accepted in the United States. For example, extensive coverage is given to chronic carbon monoxide poisoning, yet the existence of this condition is consistently denied in this country. Although the author and his associates regularly introduce the names of investigators throughout the industrial world, exact citations are not provided regularly, and more often than not these are dominated by the publications of European investigators. This elaborate publication will not prove highly useful in the United States, but it may be expected to have wide acclaim in France and in other French-reading countries.

These book reviews have been prepared by competent authorities but do not represent the opinions of any official bodies unless specifically so stated.

A Handbook of Operative Surgery: Surgical Urology. By R. H. Flocks, M.D., Professor and Head, Department of Urology, and David Culp, M.D., Assistant Professor of Urology, State University of Iowa College of Medicine, Iowa City. Cloth. $9.75. Pp. 392, with illustrations by Paul Ver Vais. Year Book Publishers, Inc., 200 E. Illinois St., Chicago 11, 1954.

Flocks and Culp, who, like many other experienced urologists, are interested in the education and training of younger men in this field, felt that there was a definite need for bringing together in one text the more important anatomic, physiological, and surgical principles involved in operative urology. They state that their hope is to give information that will be helpful to the resident in training, to the practicing urologist, and to teachers of urology. They have succeeded in their aims so well that this handbook should be a part of every operating room's quick reference library. There are many communities where strict adherence to any one branch of surgery is impossible and where many urologic procedures, especially those of an emergency nature, must be performed by the general surgeon. This book would be most valuable to have at hand in such a situation. The illustrations, all of which are line drawings in black and white, approach halftone quality. The descriptions of operations on the kidney and ureter are particularly good, while those of operations on the bladder and prostate are only fair, and the various innovations for sling operations for incontinence in men and women are inadequate. It would have been best not to mention the use of any surgical procedure in the treatment of induration of the corpora cavernosa (Peyronie's disease), since there is no method that is not followed by a worsened condition. In general, the book can be highly recommended.

Diseases of the Skin. By Oliver S. Ormsby, M.D., and Hamilton Montgomery, M.D., M.S., Professor of Dermatology and Syphilology, Mayo Foundation for Medical Education and Research, Graduate School, University of Minnesota, Rochester. Eighth edition. Cloth. $22. Pp. 1503, with 768 illustrations. Lea & Febiger, 600 S. Washington Sq., Philadelphia 6, 1954.

This comprehensive textbook has been a standard in its field for a generation. The present edition stands as a monument to its senior author, Dr. Oliver S. Ormsby, who guided the book through eight editions, but who died on April 9, 1954, while the proofs of this edition were being read. Under the continuing authorship of Dr. Hamilton Montgomery, co-author of the last three editions, and four new contributors, Drs. Edward DeLamater, Eugene Farber, Robert Kierland, and Walter Lobitz, the book maintains its standards of excellence. Extensive revisions have been made in this edition. The chapter on the chemistry and physiology of the skin has been expanded, and the results of recent investigations in this field have been included in many sections of the book. New concepts of melanin formation are presented along with advances in the therapy of pigmentary disorders. Recent studies on the L. E. phenomenon, which have broadened the concept of lupus erythematosus, are discussed, and new cytological studies of pemphigus are presented. The chapter on mycology has been revised. Descriptions of a number of new diseases have been added, and other diseases have been regrouped. This is particularly evident in the new chapter on vascular diseases. Throughout the text, emphasis has been placed on the correlation between cutaneous and systemic diseases. Many sections on therapy have been revised to include the use of cortisone and some of the newer antibiotics. The sections on therapy and prophylaxis of syphilis have been rewritten. The value of the book has been enhanced by the addition of 177 new illustrations. While this volume may appear somewhat formidable to the beginning student in dermatology, it will find a central place in any well-rounded dermatological library.

QUERIES AND MINOR NOTES

EPIDIDYMITIS

An Oklahoma physician recently requested an opinion "as to the relation of 'injury' or 'strain' to acute bacterial epididymitis of nonspecific origin." His question was referred to a consultant in the field of urology, whose opinion was published in THE JOURNAL, *April 3, 1954, page 1236. Later, a California physician wrote to the Editor commenting on the previously published answer and expressing a different opinion. Another California physician then wrote to the Editor reporting the case of a young man in whom epididymitis developed shortly after "he twisted around to tap a pipe while he was irrigating." This patient improved with a scrotal support and cold applications and was discharged as cured in 10 days. The second California physician accepted this case as a compensation case and billed the insurance company. The medical department of the insurance company denied the claim and stated that the condition was not caused by trauma but was rather an infectious condition, apparently basing its conclusion on the letter published in* THE JOURNAL, *July 24, 1954, page 1196.*

The second California physician stated also, in part, "This case has emphasized the need for a fair consideration of cause and effect in determining the compensability of a case . . . in fairness to the medical profession and the insurance companies I feel that the judgment of the physician, reached by careful consideration of all the factors, should be accepted by the insurance companies since this is the best way to protect all of the parties involved."

To be of further aid in this controversial question, THE JOURNAL *wrote to five urologists who are considered expert in this field and requested their opinions, which, with some editorial changes, follow.*—ED.

1. So-called traumatic epididymitis is extremely rare, but it can occur. I do not believe that the situation has been proved from a purely scientific point of view by any research studies; however, an article published by Dr. George Slotkin of Buffalo gives the impression that the condition can, on rare occasions, occur. Slotkin reported a chemical epididymitis due to the forcing of sterile urine down the vas into the epididymis as the result of sudden, spasmodic muscular action in male patients with overdistended bladders. If the urine were infected, the inflammatory process, instead of being a chemical reaction, might be a definite, specific infection. I have been told that this condition was relatively common in paratroopers who jumped from great heights with parachutes; that, as a result of a number of these so-called traumatic inflammations of the epididymis in jumping paratroopers, the men were ordered to jump with empty bladders; and that there were few instances of the condition under these circumstances. The opinion of the attending physician or surgeon in each individual case would be important. That the condition is rare is unquestioned.

2. Military surgeons have long been familiar with an unusual type of acute epididymitis that occurs in soldiers who are otherwise entirely well but have been forced to march or parade for long stretches in spite of the urgent need to urinate. The swelling is painful and severe, and usually there is no fever. The prostate gland secretion often shows no evidence of infection, and the urine may be normal. The condition subsides in a few days. Military surgeons have assumed that the cause of the condition was retrograde passing of urine down the vas deferens to the epididymis. Some have thought that bacteria were necessary to cause the condition, but others have theorized that urine alone might set up a chemical inflammation of the epididymis. After the war, Dr. W. J. Engel of the Cleveland Clinic and his associate, Dr. R. S. Graves, investigated this problem in laboratory animals by injecting fluid down the vas deferens in dogs, using sterile urine obtained from the dog on one side and saline solution on the other side for control. The saline injection did no harm, but epididymal inflammation developed on the side injected with urine. These experiments on dogs did not prove conclusively that retrograde urination is responsible for epididymitis in man, but they do point to a logical explanation for the etiology of a long-recognized clinical phenomenon seen not only in military experience but also in civilian and industrial areas.

3. As is usually the case, the truth lies somewhere between extremes. I agree with the original consultant's opinion (THE JOURNAL, April 3, 1954, page 1236) that "the etiological factors . . . have not been exactly determined," but the following facts are reasonably well accepted: 1. Noninfectious inflammation of the epididymis can be caused *(a)* by experimental injection of sterile urine down the vas and *(b)* by retrograde flow of urine, as may occur on straining some months after transurethral resection. 2. Infectious inflammations of the epididymis are usually transmitted via the perivasal lymphatics from the prostate and prostatic urethra but may be carried directly through the vasal lumen and then spread via the lymphatics. 3. Consequently, transient, nonbacterial epididymal pain and swelling could possibly occur on straining. True epididymitis, with such symptoms as real swelling, fever, and redness, can occur after a relatively minor strain but only if prostatitis and/or urethritis preexisted. If compensation is to be given for aggravation of preexisting disease, the decision should be for the workman. If not, "traumatic epididymitis" would not be compensable.

4. I have seen a great many patients who have had acute epididymitis apparently primarily excited by an injury or strain. Naturally, these patients had preexisting prostatitis or prostatoseminal vesiculitis, or the bacteria would not have been transferred by the strain up the course of the vas deferens to the epididymis. I am aware of Dr. Miley B. Wesson's attitude on this subject. He undoubtedly has some basis for it, in that, if one accepts every case of epididymitis in a worker as having been brought about by strain or injury, one will afford compensation to many patients who do not deserve it. In our relationships with various claim agents of railroads and insurance companies, my associates and I have taken the attitude that in order to be fair to all the parties concerned both sides of the question should be viewed in an impartial manner. Many patients go through a large part of their lives with a chronic infection in the prostate without any localizing symptoms. If such a patient should have some severe strain or injury that might conceivably cause a flare-up of the infection in the prostate and seminal vesicles because of transference of bacteria to the epididymis, it would seem that in all fairness the case should be considered compensable. On the other hand, it is very difficult to generalize on this subject, and I feel that any attempt at generalization will only lead to further confusion of the situation. Any honest, mature, experienced urologist should be able, if he is dealing with an intelligent person, to give a fair and impartial answer as to whether a strain or an injury actually was the exciting cause of an acute bacterial epididymitis of nonspecific origin, understanding at the same time that the patient had previously had a chronic or a subacute or an existent infection in the prostate and seminal vesicles. I do not believe that any industrial board or any state or insurance company should set itself up to pass judgment on all cases of epididymitis as being unworthy of compensation, even if there is definite evidence that the primary exciting cause was a strain or an injury, in the presence of a secondary, preexisting infection in that particular patient. I think it is just as unfair to do this as it is to try to extend compensation to every person who claims falsely that such a situation was excited.

5. You have asked for an opinion on one of the most difficult problems in urology. In the first place, let us consider the definition of inflammation. In Dorland's dictionary the definition is,

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The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically so stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

"The condition into which tissues enter as a reaction to injury (Adami). Inflammation is characterized by pain, heat, redness and swelling, and histologically by hyperemia, stasis, changes in the blood and walls of the small vessels, and by various exudations." In defining "epididymitis," the "itis," of course, means inflammation of the epididymis. One cannot be dogmatic and state that all cases of epididymitis are due entirely to one cause and that epididymitis can in no way be caused by anything other than a preexisting infection. Consideration must be given to the fact that over 30% of supposedly normal males have, in my experience, evidences of prostatitis of one sort or another. I believe that this condition can be adjudicated only on the merits of the particular case at hand. I fully realize the import of malpractice suits resulting from such claims by employees who are covered by various types of insurance that allow generous compensation.

ALCOHOL INTOXICATION IN INDIANS

TO THE EDITOR:—*Is there any medical evidence that Indians as a race react to alcohol intoxication differently from other races, from a qualitative or quantitative standpoint?*

Mervyn H. Hirschfeld, M.D., San Francisco.

ANSWER.—Devereux in "The Function of Alcohol in Mohave Society" (*Quart. J. Stud. Alcohol* **9**:207-251, 1948) explains that drinking habits are influenced by the law prohibiting the sale of alcohol to Indians. When the Mohave obtains alcohol he is impelled to drink it all at once, partly because he does not know how to handle liquor and partly because he wishes to dispose of the incriminating evidence as quickly as possible. At the same time he is generous and would not think of taking a drink in public without offering the bottle to his friends. A peculiar effect of drinking is the Mohave tendency to "pass out" very rapidly with relatively small amounts of liquor. This condition appears to be a convenient hysterical manifestation akin to fainting or hysterical blindness or paralysis. It may be a particularly happy solution to the problem of the woman who then is not responsible for the consequences of her drinking.

Honigmann and Honigmann in "Drinking in an Indian-White Community" (*Quart. J. Stud. Alcohol* **5**:575-619, 1945) reported that the drinking habits of some Canadian Indians are affected by the insufficiency of the supply of alcohol, the high cost of available liquor, and the law that makes it difficult for them to obtain alcohol. The Indians manage to prepare their own home brews. However, heavy sampling usually commences after the brew has been "working" only 12 hours. Solitary drinking by an Indian does not occur. His friends are invited to share the brew, and, when one batch is consumed, the party usually moves to another oasis. The same dipper or enamel cup is used by everybody. With few exceptions the Indian drains the vessel without removing it from the lips. Slow drinking is disparagingly referred to as "white man's drinking." The single cup must go around in a circle, and for one person to linger would delay the circuit. Servings increase in frequency and pauses shorten as the degree of intoxication increases. Both of the papers quoted have excellent references for further study.

NIGHT SWEATS

TO THE EDITOR:—*A patient 65 years old suffers from night sweats, averaging a change of six nightgowns per night. This patient has higher blood pressure in the morning than in the evening; it varies from 210/110 mm. Hg to 140/70 mm. Hg and is usually 160/90 mm. Hg in the morning and 140/70 in the evening. There is no cough, and lung roentgenograms, blood, and urine are normal. Please suggest treatment.*

Edward F. Hemminger, M.D., Upper Darby, Pa.

ANSWER.—The data are inadequate for a definite diagnosis. Further study is indicated to determine the status and possible cause of the arterial hypertension. The outstanding feature is the episodic arterial hypertension. This fluctuation of pressure into hypertensive ranges speaks against chronic nephropathy and coarctation of the aorta. An examination of the fundi is in order to determine whether the arterial changes characteristic of long-standing hypertension are present. Determination of the heart size would give further evidence of this sort.

Pheochromocytoma produces hypertensive episodes with neurovascular manifestations and drenching sweats. Inquiry should be made as to the occurrence of episodes of flushing or pallor, fainting, palpitation, nausea, vomiting, or aphasia. The abdomen and kidney regions must be carefully palpated for tumor. The tumor, if found, or the kidney areas should be cautiously massaged while the blood pressure is simultaneously estimated. Careful use of phentolamine (Regitine) in the hypertensive state or histamine in the normotensive or hypotensive intervals is justified. These chemical tests have hazards and should be performed only under conditions permitting control of possible severe reactions. Pyelography to determine encroachment on a renal pelvis is in order. The cold pressor test is said to be more frequently positive in pheochromocytoma than in esssential hypertension. Hyperglycemia is often present in a patient with pheochromocytoma. In hyperthyroidism the blood pressure is elevated and variable and night sweats are prominent. Does the patient have tachycardia? What is his basal metabolic rate or, better, his uptake of radioactive iodine? The basal metabolic rate may be found moderately elevated in pheochromocytoma. An uncomplicated anxiety state may be accompanied by hypertensive readings (not usually as high as 210/110 mm. Hg). Psychoneuroses may be accompanied by mild night sweats. Essential hypertension may present variable blood pressure readings dependent on environmental conditions. Such a supposition would call for a separate explanation of the night sweats.

The diagnosis, or even strongly supported suspicion, of a pheochromocytoma should be followed by exploration of the kidney area on the side suggested by pyelographic studies. Often the site of the tumor cannot be determined. Such a dilemma justifies an exploration through the abdomen for atypically located chromaffin tumors. Shock is the greatest hazard of removal of a pheochromocytoma. Adequate provisions for treating the anticipated shock should be at hand. The operation can be likened to an elaborate, critical physiological experiment on a human subject. Hyperthyroidism with a nodular goiter, if diagnosed, is best treated by thyroidectomy after suitable preparation. Hyperthyroidism due to a diffusely hyperplastic goiter is preferably treated with radioactive iodine. The very unlikely possibility of psychoneurosis would call for psychiatric care.

RECURRENT APHTHOUS ULCERS

TO THE EDITOR:—*Since a patient had infectious mononucleosis 10 years ago, he has had chronic recurrent episodes of herpes simplex involving his tongue, mouth, and throat. Is there anything of value as a prophylactic?*

Donald R. La Follette, M.D., New Albany, Ind.

ANSWER.—This is apparently a case of recurrent aphthous ulcers, which at times are exceedingly uncomfortable. The viral cause of this condition has not been proved. In particular, several careful studies have failed to prove that it is caused by the virus of herpes simplex (*J. A. M. A.* **142:**125 [Jan. 14] 1950). The herpes simplex virus cannot be isolated from the lesions, and the biopsy findings are not characteristic. Since a variety of hematological conditions sometimes give rise to various types of mouth lesions, it would probably be advisable for the questioner to have a complete hematological review. The precipitating causes of recurrent aphthous ulcers, as listed in various textbooks, are numerous, but it is rare that any specific exciting agent can be proved in the individual case. Nevertheless, it is worth while to review the history carefully in respect to foods and drugs, to determine whether or not any ingestant of this type is in any way related. Occasionally, aphthous ulcers may seem to be a secondary manifestation of a chain of events, occurring as a result of a gastrointestinal reaction primarily induced by some factor or other. Skin tests to determine possible sensitivities of this type are useless. Another factor that sometimes seems responsible, though difficult to prove definitely, is nervous tension and fatigue. No chemotherapeutic method has been demonstrated to have preventive effects in aphthous ulcers. There is no proof that repeated vaccination is of any value. It is possible that, if there are no contraindications, a short course of cortisone or corticotropin therapy, administered promptly at the onset of the symptoms of developing lesions, might be helpful. If it did not have to be repeated too frequently, such treatment should offer little risk.

DEHYDRATION AND SHOCK IN INFANTS

To the Editor:—*In the course of a rural practice, and among the underprivileged and parents with language difficulties, I am called on to treat numerous infants with neglected diarrhea. In such patients what is the best way to control the dehydration and shock? In an office practice, far removed from laboratories and hospitals, it is possible to perform only routine urine and blood studies. Darrow's solution and glucose, by clysis, mouth, and rectum, with ascorbic acid and vitamin B complex intramuscularly, are used until oral medication alone can be given. The use of the adrenal corticoid, desoxycorticosterone acetate, has suggested itself to me, in order to improve the electrolyte and fluid uptake of the extracellular material of the medicaments. I presume that the inherent shock state indicates the presence of a degree of hypoadrenocorticism. I have used this adjuvant therapeutic attack in one patient with severe dehydration with seemingly more rapid improvement than I would have otherwise expected. I have not read or heard of this procedure in pertinent pediatric literature or lectures. What is the therapeutic logic and safety of this hormonal approach?*

L. L. Gewertz, M.D., Firebaugh, Calif.

Answer.—The clinical findings in the patients who have dehydration secondary to diarrhea and patients who have adrenal cortical insufficiency may be similar (Society Transactions, *Am. J. Dis. Child.* **43**:1277 [May 14] 1932. Hislop: *Lancet* **2**:308 [Aug. 6] 1938). In the former condition, the loss of water and salt is primarily from the gastrointestinal tract; in the latter, the kidneys are primarily responsible for such loss. Shock accompanying diarrhea in infants has not been demonstrated to be the result of deficiency of desoxycorticosterone. The use of whole adrenal cortical extract or desoxycorticosterone as an adjunct in the treatment of dehydration has been recommended by a few observers (Jaudon: *J. Pediat.* **29**:696 [Dec.] 1946; ibid. **32**:641 [June] 1948. Bigler and Traisman: *A. M. A. Am. J. Dis. Child.* **82**:548 [Nov.] 1951), although proof of a deficiency of the hormone usually has not been demonstrated. Patients who have dehydration secondary to diarrhea need water and electrolytes. In such patients, the kidneys will retain needed water and electrolytes, excreting the excess once dehydration is corrected. Administration of desoxycorticosterone results in retention of salt and water by the kidneys, an effect that is usually already present in patients who are dehydrated as the result of diarrhea. Also, the use of desoxycorticosterone would tend to prevent the excretion of the excess of salt and water in the event of overcorrection of dehydration. Toxic manifestations of administration of desoxycorticosterone consist of edema, hypertension, cardiac failure, and weakness, all of which are the result of excessive retention of sodium and chloride and increased excretion of potassium. The use of desoxycorticosterone is rarely, if ever, indicated in the treatment of diarrhea in infants.

COLA DRINKS

To the Editor:—*I would appreciate information on the composition and physiological effects of cola drinks.*

Alfred J. Cantor, M.D., Flushing, N. Y.

Answer.—The composition of cola drinks is basically that of most sweetened, carbonated beverages, a solution of sugar in carbonated water. The flavoring in the cola drinks is primarily an extract of the kola nut (Cola acuminata), whose physiological and pharmacological importance is dependent chiefly on its caffeine and theobromine content. Of these two, it is believed, the caffeine is the more important ingredient in the cola drinks. The caffeine content of the leading cola drinks ranges from 0.06 to 0.6 grains in each 6 fluid ounces (about 3.6 to 36 mg. per 0.18 liter). Coca-Cola, averaging 0.5 grains (30 mg.), and Pepsi-Cola, with 0.6 grains, are typical representatives. This is about one-third that contained in an equivalent volume of coffee, which produces some wakefulness and relief from fatigue in some persons. Taken in the form of a cola drink, caffeine would have an immediately perceptible action only when taken in relatively large quantities. Some diuretic action is also possibly exerted by the xanthine content, but these active ingredients are all present in doses markedly below those used for any constructive therapeutic end. A further comment on the sugar content can be found in a report of the Council on Foods and Nutrition entitled "Some Aspects of Sugar, Candy and Sweetened Carbonated Beverages" (*J. A. M. A.* **120**:763-765 [Nov. 7] 1942).

RELIEVING INTESTINAL DISTENTION

To the Editor:—*In a patient being operated on for release of intestinal obstruction due to multiple adhesions caused by a bile peritonitis, would the insertion of a Miller-Abbott tube be preferred to ileostomy? Would the Miller-Abbott tube suffice to decompress the intestines in the event of future obstruction of the small intestine, or should an enterostomy tube be sutured into the small intestine and exteriorized? In cholecystectomy should a drain be placed in the biliary area, and, if so, when?* *R. A. Heebiner, M.D., Compton, Calif.*

Answer.—A double-lumen suction tube in most instances is more effective in relieving intestinal distention than a surgical ileostomy and can be inserted without particular risk to the patient. Such a tube usually suffices to decompress the distended intestine when it is obstructed. The insertion of a drainage tube into the biliary area at the time of a cholecystectomy is rarely indicated. In some instances of gallbladder perforation with secondary infection, this may be wise.

DERMATITIS IN LOCOMOTIVE ENGINEER

To the Editor:—*A man has worked for many years as engineer on a passenger route. A patch of dry, scaly, itchy eczema occurred on his ankle three years ago. This persisted until six months ago, when the same type of lesion spread to the entire body, making it imperative that he quit his job. A dermatologist made a diagnosis of "chromite poisoning," evidently correct, since on cessation of contact the lesions cleared up. Can the man expect to have to give up his job entirely, or has recurrence been unlikely on recontact? What are the irritating characteristics of this "chromite" found in the cleaning and antirust duties required of an engine crew?*

Eugene R. Benedetto, M.D., Alliance, Ohio.

Answer.—Diesel locomotives are not mentioned, but such work is assumed. Diesel motors require water cooling much as do automobile engines. To prevent corrosion, sodium chromate is in wide use; along with certain other chemicals, all more or less harmful, it is introduced into the cooling system in about a 6% solution. Within the radiator, dilution leads to a concentration of 0.08%. If there are leaks in the cooling system the entire locomotive may become contaminated. Although the solution within the cooling system is dilute, leakage is followed by concentration and drying to powder, so that a little chromate may be blown about anywhere on or within the locomotive. This little is sufficient, since much chromate dermatitis is allergic, although some may be purely on a contact basis. This dermatitis usually appears on hands and forearms but is known to arise on ankles and may be seen on any exposed part. So long as the exposure persists, real cure may not be expected, although a few workmen, with or without treatment, become nonresponsive. This occurrence cannot be predicted. There are no precise preventive measures. Barrier creams promise little in prevention. Dimercaprol (BAL) ointment, 3%, holds some promise in treatment, but intramuscular injection of that chemical is useless. Some patients are intolerant to dimercaprol. Laving with a 5% solution of sodium thiosulfate has been advocated. Ointments of 5% citrates or tartrates may possess some virtue, but all these measures are but palliative. Some cases will respond to hydrocortisone ointment if exposure no longer exists. So much difficulty has arisen from this cause among diesel locomotive crews and roundhouse attendants that a shift will inevitably be made to less damaging anticorrosives. Already some railroads are resorting to aluminum anticorrosives, which, while less effective, are little damaging. A number of high awards ($42,000 in one instance) within the courts under the Federal Employers Liability Act probably will accelerate the shift away from the use of chromate. Therein is the only substantial prospect of banishing this occupational disease.

PERSISTENT TACHYCARDIA IN A CHILD

TO THE EDITOR:—*What is the treatment of persistent sinus tachycardia present since birth in a girl, now 9 years old? All investigative cardiac tests have had normal results, and it is felt that this is on the basis of dysfunction of the cardiac innervation. The pulse runs consistently about 120 to 130 per minute, with all other findings referable to the heart normal. I could not find much in the literature about this. One would think that without therapy such a persistent tachycardia would lead sooner to cardiac failure.*

H. Fisketti, M.D., Duluth, Minn.

ANSWER.—A persistent sinus tachycardia of the rate stated, since birth, suggests some abnormal metabolic activity of the cardiac pacemaker in the sinus node. Theoretically, it probably does show that the heart beats are initiated at a more rapid rate than is usual at the age of 9 years, although, at birth, the rate would not be unusual. It might be that the metabolic activity of the sinus node is increased, resulting in this tachycardia. It may be that this has been caused by injury to the sinus node as a result of some toxic or infectious condition during or after gestation, resulting in hyperirritability. All the common causative factors must be searched for in the hope that it could have been acquired by external causes, either prenatal or postnatal. Such etiology is hypermetabolic activity, focal infection, or toxic reaction. In addition, the nervous state of the child must be considered. Assuming that all possible sources of cause have been eliminated and that the child is not a fearful or nervous child, it would be best to do little or nothing for the rate and see if it does not subside after puberty. The rate of 120 to 130 per minute is just above the limit that the most liberal cardiologists consider normal. The activity of the patient should be curtailed judiciously in order to minimize the possible effects of strain in the presence of the increased rate. Proportionate dosage of a sedative might be tried at this time. After puberty special attention to metabolic influences would be indicated, and, if the rate persists at 120 to 130 per minute, it is probable that the judicious use of digitoxin to act as a governor in slowing the rate to below 100 per minute would be indicated. An important test to make would be to observe the sleeping pulse rate as compared to the daytime rate. If the rate, while the patient is asleep, remains fast, one would be justified in assuming that some diseased state of a toxic or infectious nature existed.

DIAGNOSIS OF EPILEPSY

TO THE EDITOR:—*Is there any absolute test for epilepsy if electroencephalography is not available?*

Mark E. Adams, M.D., Raiford, Fla.

ANSWER.—There is no pathognomonic sign for epilepsy. The diagnosis is made primarily from the history. An electroencephalogram may or may not support a diagnosis derived from the history. A definitely abnormal record would support such a diagnosis. The presence of seizure discharges would be strongly in favor and alternate three-per-second spike wave discharges would be diagnostic of a petit mal epilepsy, either actual or incipient.

IMMUNIZATION

TO THE EDITOR:—*I have read that typhoid vaccine is being mixed with diphtheria-pertussin-tetanus vaccine and given intramuscularly both for initial immunization and for booster shots. Please comment. What is the current opinion on immunizing adults against diphtheria?* *M.D., Alabama.*

ANSWER.—Routine typhoid vaccination for civilians is not customary and is not indicated except in localities where typhoid fever is known to be endemic and in flood areas. If typhoid vaccine is combined with the triple antigens, the possibility of severe local and systemic reactions is increased. Before undertaking the active immunization of adults against diphtheria, Schick tests should be performed to determine whether the procedure is necessary.

GERMAN MEASLES

TO THE EDITOR:—*Why is the word "German" used in connection with German measles?* *M.D., Louisiana.*

ANSWER.—Wesselhoeft in the *New England Journal of Medicine,* June 19, 1947, says that: according to Emminghaus rubella was first described by two German physicians, de Bergen in 1752 and Orlow in 1758. Numerous others described it under various terms; eventually it came to be called roeteln. This term was used in both England and America, and it is under this heading in the first series of the Index Catalogue of the Library of the Surgeon General's Office. Owing to the early interest displayed by German writers and the acceptance of the term roeteln, this disease came to be known as "German measles." In 1866 Henry Veale introduced the term rubella, which is now accepted in English-speaking countries and should be encouraged for the simple reason that this disease is not a German form or any other form of measles, but rather a distinct entity. The terminology of rubella among the different countries still is a cause of confusion. The trouble lies in the historical background. The early German writers considered it to be a modified form of either measles or scarlet fever. Schonlein regarded it as a hybrid of both and gave it the name "rubeola" to distinguish it from "morbilli" or true measles. Eventually rubeola came to be used to designate measles, but to this day the word rubeola is used in Sweden and Spain for rubella. In France the term is modified to rubeole, and even in Austria rubeolae is sometimes used in place of roeteln.

17-KETOSTEROIDS IN HOMOSEXUALS

TO THE EDITOR:—*What is the 17-ketosteroid level in male and female homosexuals as compared with heterosexual persons?*

Frederick G. Niemand, M.D., San Francisco.

ANSWER.—The Zimmerman reaction is widely used for the assay of 17-ketosteroids in the urine. This value is believed by some to be identical with the androgen assay. The test, however, is not specific for androgens but for a certain group of steroids. This must be borne in mind in evaluating the laboratory findings. The normal man excretes androgens and estrogens in the urine in a ratio of about 2:1, while in women the ratio is about 1:7. In male hypogonadism, the values of urinary 17-ketosteroids correspond to those in the normal range for women (8 to 10 mg. per 24 hours). Neustadt and Meyerson in a quantitative urinary sex hormone study of 29 overt homosexuals found a marked disturbance in the normal androgen-estrogen ratio. The deviation from the norm took one of two directions: a decrease in the androgens combined with a normal amount or excess of estrogens or a normal amount of androgens with an excess of estrogen. Similar findings have been reported. These findings have not been corroborated by all workers in this field. The differences in the results may be due to our confused and uncertain thinking on the subject of homosexuality. Many writers dismiss the subject with the brief statement that homosexuality is entirely of psychic origin. Others believe that endocrine factors are basic in this condition. Even Freud admitted that in many cases of homosexuality a constitutional factor is present. Much of this confusion will be overcome if we classify homosexuality into the following two broad groups: homosexuality of psychogenic origin and homosexuality of endocrine origin. True, anthropomorphic studies as well as endocrine studies have not revealed a specific body structure that is characteristic of the homosexual. On the other hand, the passive male homosexual shows a definite eunuchoidal structural development and feminine mannerisms of speech, gait, and behavior. The effeminate male homosexual is easily recognized. To a lesser degree, the same is true of the masculinized female homosexual. It is in these cases that the clinical and laboratory findings are significant and endocrine therapy is of value.

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HEMOLYTIC ANEMIA IN PREGNANCY

TO THE EDITOR:—*Is any special care required for a 37-year-old primigravida who had hemolytic anemia about three years ago with resultant massive thrombosis of both legs and amputation of one below the knee? At present laboratory findings are normal, except for a strongly positive reaction to the Coombs test. Would there be any contraindication to the use of saddle block or other forms of spinal anesthesia? Since the patient is an elderly primigravida, would cesarean section be indicated without a test of labor? The cause of the anemia was never determined.*

Ardow Ameduri, M.D., Utica, N. Y.

ANSWER.—In view of the past history of this patient and the fact that she is to have her first baby at the age of 37, a cesarean section is justified. If the operation is to be elective, one must be certain the baby is at or near term. In this decision a roentgenogram may help. The safest procedure for the baby is to wait until labor begins and then perform the cesarean section.

CORONARY THROMBOSIS

TO THE EDITOR:—*Is there sufficient evidence at hand to furnish definite proof that anticoagulants do affect the incidence of coronary thrombosis? If so, what percentage of the normal prothrombin time must be maintained to secure adequate protection? Some clinicians insist that the prothrombin time must be constantly below 26% of normal, whereas other investigators are satisfied with levels as high as 50% of normal.*

M.D., California.

ANSWER.—Although there is as yet no rigidly controlled statistical study, it is the opinion of many workers that anticoagulants have a definite effect on the incidence of coronary thrombosis. It is the feeling of these workers that, if a patient has shown a propensity towards coronary thrombosis by having either two attacks of coronary thrombosis or comparable manifestations, this patient's statistical likelihood of incurring further thrombosis is reduced by maintenance on long-term anticoagulant therapy with one of the coumarin derivatives. With a control of 12 to 15 seconds, a prothrombin time of 20 to 30 seconds would appear to represent a reasonable range for the maintenance of this sort of long-term therapy.

WARTS

TO THE EDITOR:—*Are warts transmitted from fowl to human hands? I have attended several poultry workers who have had warts on the hands.*

Walter W. Ebeling, M.D., Mount Vernon, Wash.

ANSWER.—The evidence is quite well established that verruca vulgaris is due to a virus. I know of no work that has been done to prove that poultry workers are more susceptible to warts than any other persons, but in view of the fact that a virus is the cause of the disease it might be expected that the warts would be transmitted in any manner in which the worker came in contact with the virus.

DIABETES

TO THE EDITOR:—*Is there such an entity as acute-subacute diabetes mellitus with the classical signs and symptoms and complete spontaneous recovery? What is the cause in these cases? What is the outlook?*

Wm. S. Levy, M.D., Woonsocket, R. I.

ANSWER.—A few cases of diabetes mellitus with acute onset and "complete" recovery have been reported. These must be regarded with skepticism because the recovery, although apparently complete at the time of report, has usually not been proved to be permanent. It is not uncommon to see diabetes precipitated by a severe illness or other stress subside to the point of normoglycemia after the acute episode has passed, but such patients remain potentially diabetic and are apt to have the disease eventually in recognizable and permanent form. The cause of most human diabetes, in the last analysis, is unknown, although a hereditary defect of the pancreas is an important factor. This statement also applies to the cases in question. Patients of this kind should avoid obesity at all costs and should be carefully followed.

SYPHILIS IN OCTOGENARIAN

TO THE EDITOR:—*I think a patient, aged 85, has latent syphilis. He has not had a chance to acquire it since 1916. He has a dim recollection of having a small sore on his penis about that time that caused him no concern. He thinks he later had sore throats. Years ago he had some boils in the axillary space. Five years ago he had one attack of angina pectoris that cleared up with treatment; now he has very little trouble. He is somewhat unsteady but is active and does not use a cane. He is worried about himself, and this causes him to be depressed at times. A few months ago he began to have early morning headache that soon cleared up after arising. The blood pressure and urine are normal. Vision with glasses is normal. Mentally he is almost normal. He rarely wakes up during the night. I would appreciate your opinion on diagnosis, prognosis, and treatment. I am fully convinced that he has syphilis. He says that he is sure of it, and he is much depressed over it. He is averse to having a spinal or blood test, on the ground that his condition would be known if he had it done in our hospital. What can be done, if anything? Otherwise we will do what we can and let it go at that.*

M.D., West Virginia.

ANSWER.—If the man of 85 described in the query does have syphilis, it is a matter of no practical importance. The inquirer requests an opinion on diagnosis, prognosis, and treatment. As to diagnosis, on the basis of the information given nothing more definite can be said than that the patient is obviously suffering from senility. Judging from his age and from the history supplied, he has, with near certainty, arteriosclerotic heart disease. As to prognosis, this should be guarded in a man of 85, since he has already outlived his normal life span. As to treatment, certainly none should be given for syphilis. If he ever had syphilis, it may be reemphasized that an infection of 40-odd years' duration in a patient 85 years old is of no practical importance. There is a contradiction in the inquiry as to the patient's psychiatric status. It is said that he is mentally almost normal, and yet the comment is made that the patient is suffering from a fear of syphilis and is considerably depressed over it. Everything should be done to alleviate his fear by reassurance.

INTERVALS BETWEEN IMMUNIZATION INJECTIONS

TO THE EDITOR:—*In the course of initial immunization with diphtheria-pertussis-tetanus, what should the procedure be when the patient is not seen at the usual four to six week interval? The mother may neglect to bring the child back regularly, allowing several months to elapse between injections. Often, for example, infections of upper respiratory tract interfere with the immunization schedule. At what point is it necessary to start the entire series over again, or give additional injections?*

M.D., New York.

ANSWER.—Although the customary intervals for injections in initial immunizations are four to six weeks, it does not mean that longer periods cause the procedures to be ineffective. Ordinarily it is not necessary to start the entire series again. The second injection can be given as soon as possible after the first six weeks have elapsed, provided the child is in a good state of health and has had no serious reaction to the first injection. The same circumstances would apply to the third injection.

RUBELLA AND PREGNANCY

TO THE EDITOR:—*A 24-year-old mother, gravida 1, para 1, recently has had rubella. She was told by an internist not to become pregnant for at least six months, because of the possibility that the virus would remain in the system that long and cause fetal congenital anomalies. Was this advice justified?*

Alfred D. Katz, M.D., Los Angeles.

ANSWER.—On the basis of present knowledge there is no justification for the assumption that the virus of rubella may remain in the system for a prolonged period after an attack of the disease.